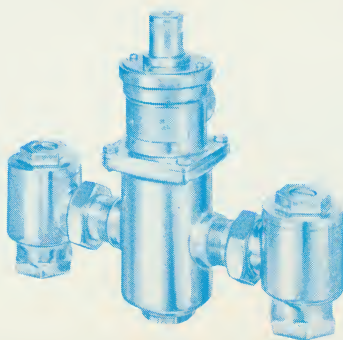


Multiple SHOWERS ... by POWERS

SERIES 430
HYDROGUARD®



capacity — gpm

140F Hot Inlet, 60F Cold Inlet and 100F Delivery Temperature								
Model	Size		Pressure Differential — PSI					
	Inlet	Outlet	10	20	30	45	60	100
431	¾"	¾"	11	16	20	25	29	39
432	¾"	1"	20	30	36	45	52	67
433	1¼"	1¼"	35	51	64	80	93	123
434	1¼"	1½"	55	82	101	125	146	190

Model	Number of 5 G.P.M. Shower Heads Served	
	Minimum	Maximum
431	1	5
432	2	9
433	3	16
434	5	25



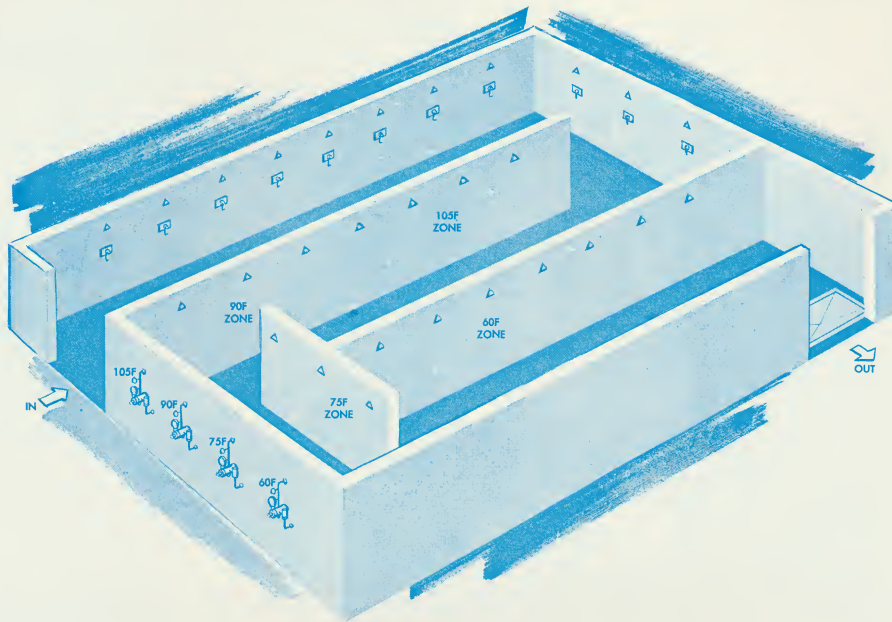
product numbers

Model	Finish	Temperature Range	Product Number	List Price
431	Satin Sprayed	65 — 115F	431-1065	\$155.00
	Polished Chrome Plate	65 — 115F	431-2065	\$215.00
	Satin Sprayed	85 — 160F	431-1085	\$175.00
	Polished Chrome Plate	85 — 160F	431-2085	\$235.00
432	Satin Sprayed	65 — 115F	432-1065	\$175.00
	Polished Chrome Plate	65 — 115F	432-2065	\$235.00
	Satin Sprayed	85 — 160F	432-1085	\$195.00
	Polished Chrome Plate	85 — 160F	432-2085	\$255.00
433	Satin Sprayed	65 — 115F	433-1065	\$255.00
	Polished Chrome Plate	65 — 115F	433-2065	\$335.00
	Satin Sprayed	85 — 160F	433-1085	\$275.00
	Polished Chrome Plate	85 — 160F	433-2085	\$355.00
434	Satin Sprayed	65 — 115F	434-1065	\$300.00
	Polished Chrome Plate	65 — 115F	434-2065	\$395.00
	Satin Sprayed	85 — 160F	434-1085	\$320.00
	Polished Chrome Plate	85 — 160F	434-2085	\$415.00

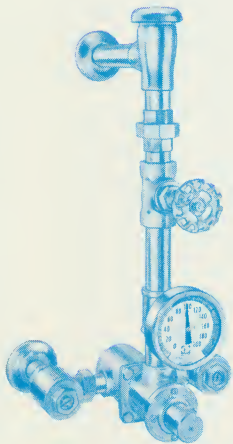
HOW TO ORDER: Order by Product Number i.e., 1 — 432-2065 Hydroguard. Product Number and List Price includes Hydroguard and pair of inlet strainer checkstops.

• The luxury of built-in Safety, Comfort and Convenience •

SERIES 430 HYDROGUARD ...for progressive showers



... supply fixtures

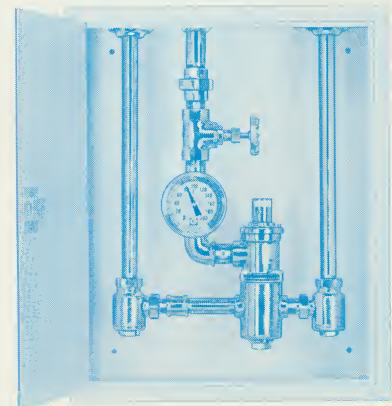


Series 430 Hydroguard fixture (shown with vacuum breaker). See adjoining table for Product Numbers and List Prices of model variations.

Product Number	Hydroguard	Vacuum Breaker	List	Ship.Wt.(lbs.)
131-0745	431 - ¾" x ¾"	Yes	\$345.00	24
131-0746		No	\$320.00	24
131-0747	432 - ¾" x 1"	Yes	\$410.00	30
131-0748		No	\$365.00	30
131-0749	433 - 1¼" x 1¼"	Yes	\$565.00	55
131-0750		No	\$485.00	55
131-0751	434 - 1¼" x 1½"	Yes	\$670.00	60
131-0752		No	\$570.00	60
Hydroguard and piping polished chrome plate. Temperature range of adjustment 65 - 115F				
HOW TO ORDER: Order by Product Number i.e., 1 - 131-0745 Hydroguard Supply Fixture. Product number and list price includes Hydroguard, piping & thermometer.				

... cabinet supply fixtures

White Baked Enamel Cabinet					
Product Number		Hydroguard	Hydroguard and Piping Finish	List Price	Ship.Wt.(lbs.)
Wall Mounted	Recessed				
131-0753	131-0754	431 - ¾" x ¾"	Polished Chrome Plate	\$440.00	145
131-1034	131-1076		Satin Sprayed	\$370.00	145
131-0755	131-0756	432 - ¾" x 1"	Polished Chrome Plate	\$490.00	150
131-1038	131-1000		Satin Sprayed	\$420.00	150
131-0757	131-0758	433 - 1¼" x 1¼"	Polished Chrome Plate	\$640.00	190
131-1019	131-0998		Satin Sprayed	\$535.00	190
131-0759	131-0760	434 - 1¼" x 1½"	Polished Chrome Plate	\$715.00	200
131-0995	131-0999		Satin Sprayed	\$595.00	200
Stainless Steel Cabinet					
131-0802	131-0803	431 - ¾" x ¾"	Polished Chrome Plate	\$560.00	145
131-1252	131-1130		Satin Sprayed	\$490.00	145
131-0804	131-0805	432 - ¾" x 1"	Polished Chrome Plate	\$610.00	150
131-0996	131-1022		Satin Sprayed	\$540.00	150
131-0806	131-0807	433 - 1¼" x 1¼"	Polished Chrome Plate	\$785.00	190
131-1056	131-1015		Satin Sprayed	\$680.00	190
131-0808	131-0809	434 - 1¼" x 1½"	Polished Chrome Plate	\$860.00	200
131-1017	131-1074		Satin Sprayed	\$740.00	200
Temperature Range of Adjustment 65 - 115F					
HOW TO ORDER: Order by Product Number i.e., 1 - 131-0753 Hydroguard Cabinet Supply Fixture. Product number and list price includes Hydroguard, piping, thermometer and cabinet.					

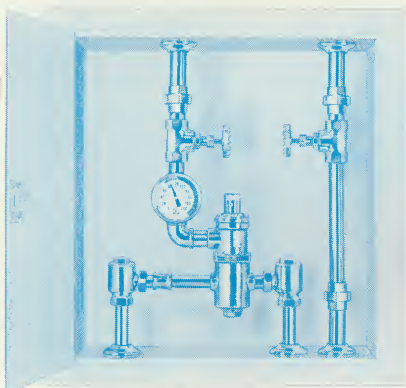


Series 430 Hydroguard fixture (shown in wall mounted cabinet). See adjoining table for Product Numbers and List Prices of model variations.

SERIES 430 HYDROGUARD ... for group showers



... cabinet supply fixtures with cold water by-pass

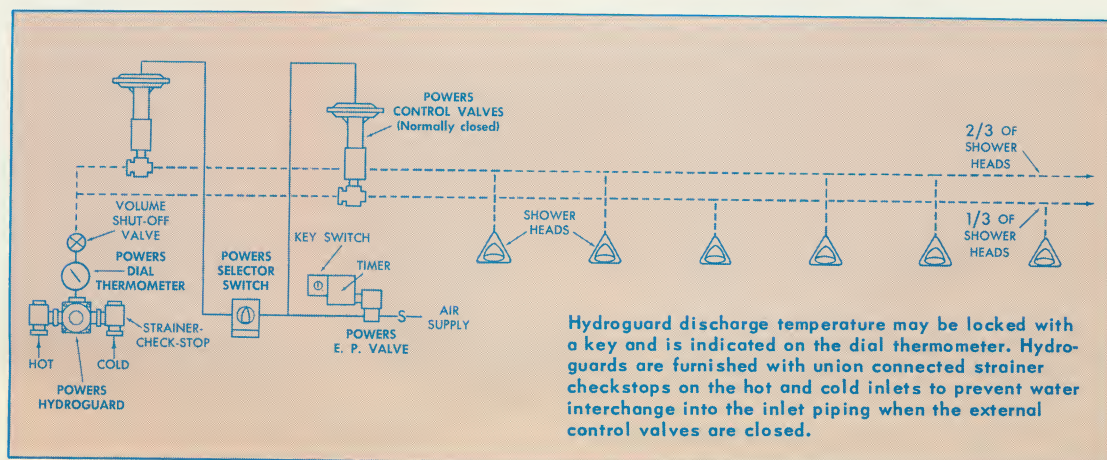


Series 430 Hydroguard fixture with cold water by-pass (shown in recessed cabinet). See adjoining table for Product Numbers and List Prices of model variations.

White Baked Enamel Cabinet					
Product Number		Hydroguard	Hydroguard and Piping Finish	List Price	Ship.Wt. (lbs.)
Wall Mounted	Recessed				
131-1222	131-1226	431 - ¾" x ¾" by-pass	Polished Chrome Plate	\$575.00	150
131-1223	131-1227		Satin Sprayed	\$480.00	150
131-1230	131-1234	432 - ¾" x 1" by-pass	Polished Chrome Plate	\$640.00	155
131-1231	131-1041		Satin Sprayed	\$555.00	155
131-1237	131-1152	433 1¼" x 1¼" by-pass	Polished Chrome Plate	\$805.00	200
131-1238	131-1241		Satin Sprayed	\$670.00	200
131-1244	131-1248	434 1¼" x 1½" by-pass	Polished Chrome Plate	\$930.00	215
131-1245	131-1249		Satin Sprayed	\$750.00	215
Stainless Steel Cabinet					
131-1224	131-1228	431 ¾" x ¾" by-pass	Polished Chrome Plate	\$705.00	150
131-1225	131-1229		Satin Sprayed	\$610.00	150
131-1232	131-1235	432 ¾" x 1" by-pass	Polished Chrome Plate	\$770.00	155
131-1233	131-1236		Satin Sprayed	\$685.00	155
131-1239	131-1242	433 1¼" x 1¼" by-pass	Polished Chrome Plate	\$935.00	200
131-1240	131-1243		Satin Sprayed	\$800.00	200
131-1246	131-1250	434 1¼" x 1½" by-pass	Polished Chrome Plate	\$1060.00	215
131-1247	131-1251		Satin Sprayed	\$880.00	215
Temperature Range of Adjustment 65 - 115F					
HOW TO ORDER: Order by Product Number i.e., 1 - 131-1222 Hydroguard Cabinet Supply Fixture. Product Number and list price includes Hydroguard, piping, thermometer and cabinet where specified.					

... special assemblies

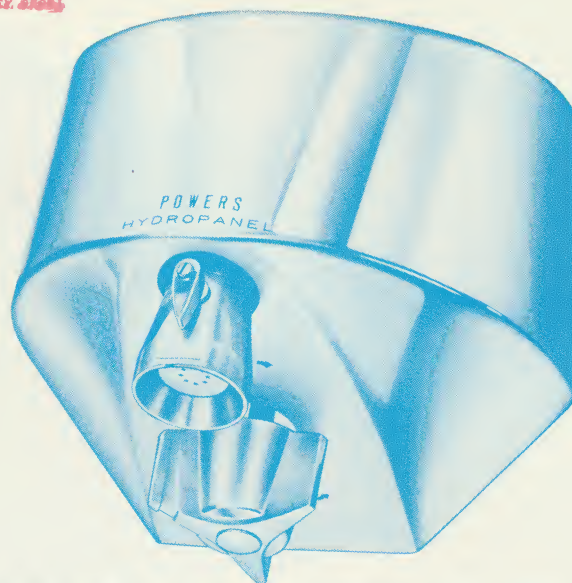
Custom shower systems as well as special cabinet assemblies are available incorporating many features such as automatic timers, solenoid valves and selector switches. Consult your Powers branch office for details on these systems.



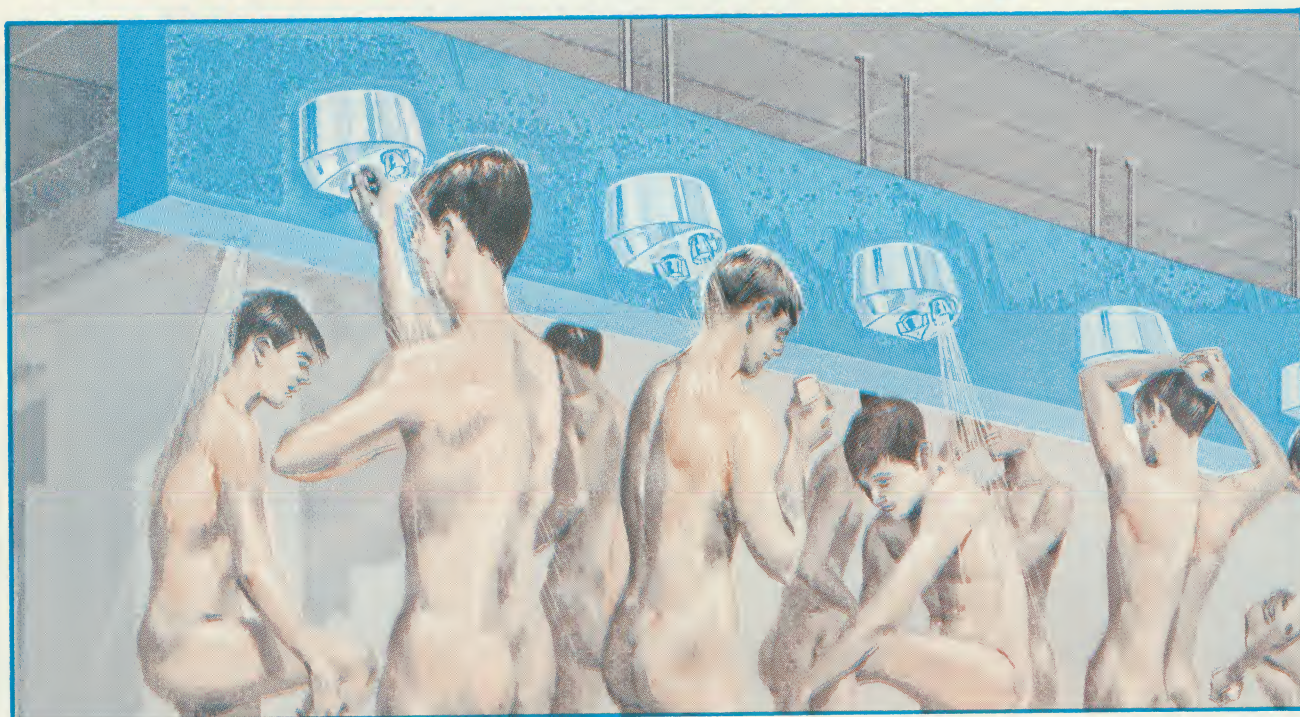
SERIES 450

HYDROPANEL®

WILLIAM P. POWER
THE POWERS REGULATOR COMPANY
222 COMMERCIAL STREET • SPRINGFIELD, NEW JERSEY 07081
AREA CODE 201-376-3700



- Two types – pressure or thermostatic
- Shower head and mixer completely enclosed in a polished chrome plated cover
- Union inlet connections
- Inlet strainer checkstops
- Mixer and shower head mounted at shower head height eliminates sharp projections



product numbers

Model	Finish	Location of Inlets	Product Number	List Price
Thermostatic	Polished Chrome Plate Cover and Shower Head	Top (for 1/2" pipe)	450-2000	\$120.00
		Back (for 1/2" copper)	450-2003	\$125.00
Pressure Equalizing		Top (for 1/2" pipe)	450-1000	\$ 98.00
Back (for 1/2" copper)		450-1003	\$103.00	
Vandal proof feature (for either model) Add:				\$ 10.00
Pipe Cover Kit, Ceiling to Hydropanel, 26" or less.			450-104	\$ 40.00
Pipe Cover Kit, Ceiling to Hydropanel, 26" to 32"			450-114	\$ 45.00

HOW TO ORDER: Order by name and product number, for example:

1 – Series 450 Hydropanel, thermostatic 450-2000

Note: Hydropanel is furnished complete with either thermostatic or pressure equalizing mixing valve, type D rigid shower head with spray adjustment, 1/2" union inlets (top or back) with combination strainer checkstops, wall mounting bracket. Pipe cover kits are finished with polished chrome plate to match Hydropanel.



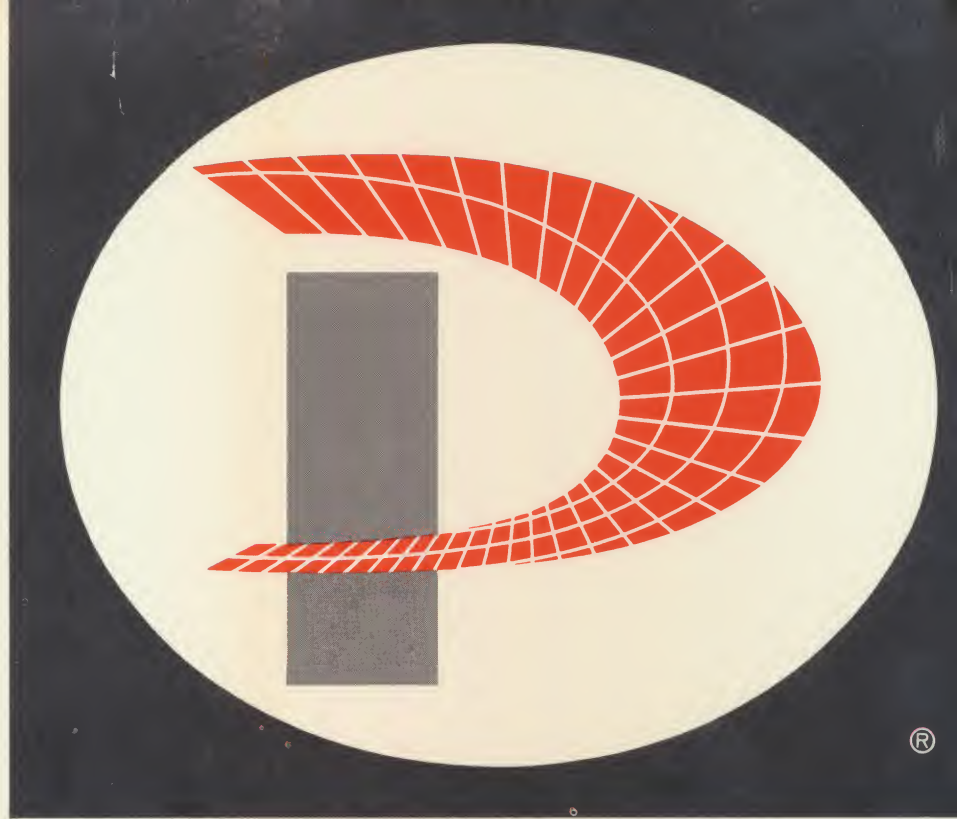
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CIRCULAR SBC-3

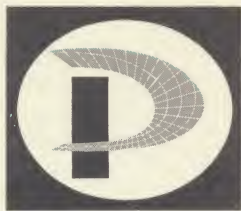
MAY, 1968



WATER CONTROL EQUIPMENT

WILLIAM P. POWER
THE POWERS REGULATOR COMPANY
20 COMMERCE STREET • SPRINGFIELD, NEW JERSEY, 07081

THE POWERS REGULATOR COMPANY



THE POWERS REGULATOR COMPANY

GENERAL OFFICES AND FACTORY • SKOKIE, ILLINOIS 60076
CANADA HOME OFFICE: 15 TORBARRIE RD., DOWNSVIEW, ONTARIO

manufacturers of

POWERS AUTOMATIC TEMPERATURE CONTROL SYSTEMS

and

POWERS/GROVER TRANSITUBES® — PNEUMATIC TUBE SYSTEMS

for

- Schools, Churches, Hospitals, Institutions
- Hotels, Motels, Hi-rise Apartments, Condominiums
- Commercial and Industrial buildings

and

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- Photographic, Graphic Arts, Printing
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- Municipal Sanitation

also

SHOWER-BATH MIXING CONTROL

and accessories

for

- Homes, Hotels, Motels, Hospitals, Institutions
- Hi-rise Apartment Buildings, Condominiums

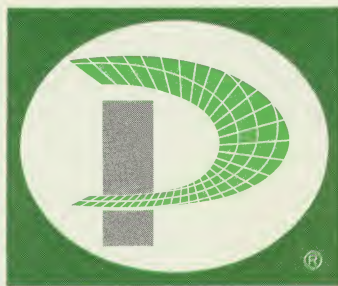
FOR INFORMATION

contact your nearest POWERS office

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line
of

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AREA CODE 201-878-2700



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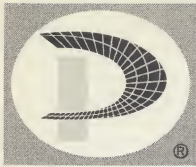
Contact your POWERS representative for additional information or assistance with your temperature control requirements. POWERS has offices in principal cities in the U.S.A. and Canada.



THE POWERS REGULATOR COMPANY

★ Home Office and Factory: 3400 Oakton St., Skokie, Illinois 60076

★ Canada Home Office: 15 Torbarrie Rd., Downsview (Toronto) Ont.



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heating, air conditioning and venti-
lating systems and controls; Powers/
Grover Transittubes® pneumatic des-
patch tube systems.

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AND
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CANADA: 15 Torbarrie Road, Downsview (Toronto) Ontario. Telephone: Area Code 416, 241-3504

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1003 S Street
Tel: 277-6433

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Area Code: 602

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2318 30th Street
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- over -

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Area Code: 608

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Area Code: 414

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Area Code: 403

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Tel: 733-9781
Area Code: 613

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Downsview, Ontario
Tel: 241-3544-8
Area Code: 416

QUEBEC

MONTREAL 5, P.Q.
8040 Jarry Street East
Tel: 352-9220
Area Code: 514

SASKATCHEWAN

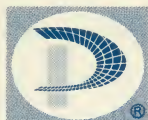
REGINA
3501 Dewdney Ave.
Tel: 523-2885
Area Code: 306

WATER CONTROL EQUIPMENT CATALOG

- CONTENTS -

SUBJECT	FORM NO.
- NO. 11 REGULATORS -	
No. 11 Regulators	SC 595-0
SC 595.0 Supplement 1 - Valve Sizing Data for No. 11 Regulators	
- HYDROGUARD -	
(Shower/Bath Mixing Valves)	
Individual Showers by Powers	SBC-2
Multiple Showers by Powers	SBC-3
Series 410 Hydroguard	MV 410-1
Series 420 Hydroguard	MV 420-1
Series 430 Hydroguard	12C
- FOTOPANEL -	
Fotopanel	MV 440-1
- D MIXER -	
D Mixer	14A
- ACCRITEM -	
Accritem Temperature Controller	A2-11
- FLOWRITE DIAPHRAGM VALVES -	
Flowrite Valves	A3-1 thru A3-4
Note: For Flowrite sizing data see E1 series at back of catalog.	
- THERMOMETERS -	
Dial Thermometer	TM 894-0

U.S. List Prices For Items Appearing In This Catalog - See Price Sheet WCE-1.



SINGLE SEAT • DOUBLE SEAT • WATER MIX

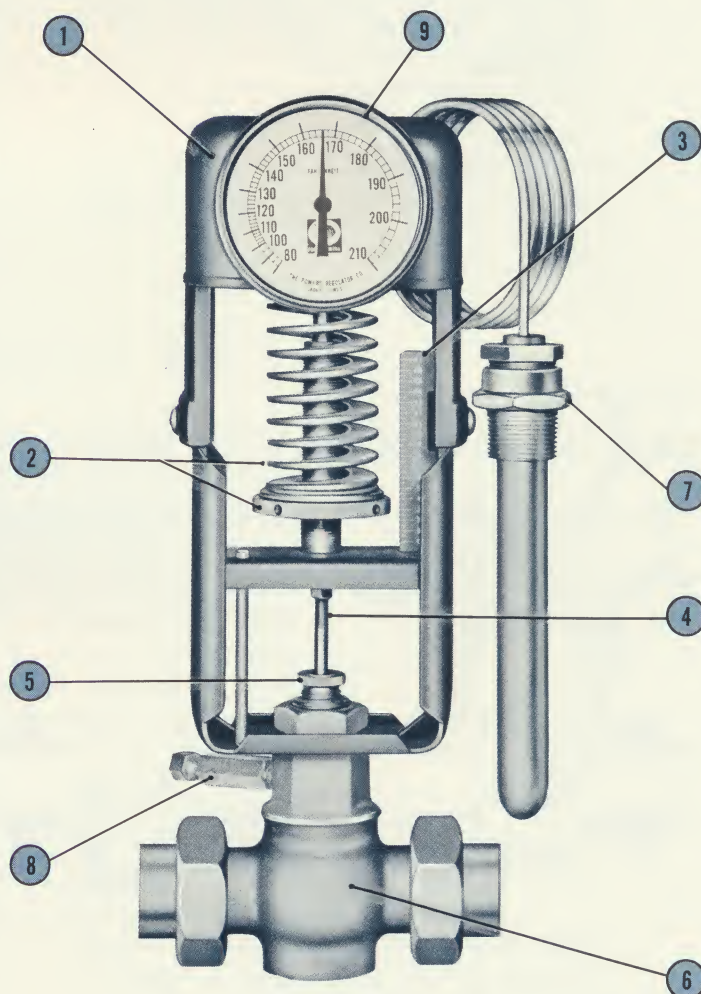
Powers No. 11 Regulator is a self actuating regulator which automatically controls temperature without using external power.

A vapor-pressure thermal system rapidly senses temperature changes at the bulb and positions the valve plug to maintain desired control.

The sensing bulb is placed in position to sense the temperature to be controlled. The control valve is placed in the pipe line supplying the heating or cooling medium. A temperature change at the bulb causes a pressure change of the volatile fluid in the bulb which is transmitted through the capillary tubing to the bellows, causing the bellows to expand or contract. The bellows movement opposes the action of the spring and gradually operates the valve. The spring tension, which is adjustable, determines the temperature control point.

FEATURES

- 1 TWO-PLY BELLOWS — adds extra strength and increases the service life of the regulator.
- 2 SPRING & TEMPERATURE ADJUSTMENT NUT—ball bearing permits easy adjustment of temperature control point. Temperature adjustment rod included with each regulator.
- 3 TEMPERATURE SETTING INDICATOR—for easy reference in case the control point is changed.
- 4 VALVE STEM—made of corrosion-resistant Monel highly polished for less friction and quicker response.
- 5 PACKING GLAND ASSEMBLY—accurately guides valve stem, reduces wear, prevents leaking. Type 590 packing fabricated from Teflon-coated asbestos is the finest material available.
- 6 VALVE BODIES—made of bronze and equipped with female unions for easy installation, sizes $\frac{1}{2}$ "–2". Cast iron flanged ends, sizes 2 $\frac{1}{2}$ "–4".
- 7 BULB CONNECTION—union tight connection with pressure tight bushing permits easy installation in tank or pipe line. Also available are J bulbs for open tank installation.
- 8 STEM LUBRICATOR—available as an accessory. Greatly decreases friction between packing and stem minimizing packing gland maintenance.
- 9 NO. 11 REGULATORS are available in indicating or non-indicating models. Indicating models feature a 4" dial thermometer for constant temperature indication.



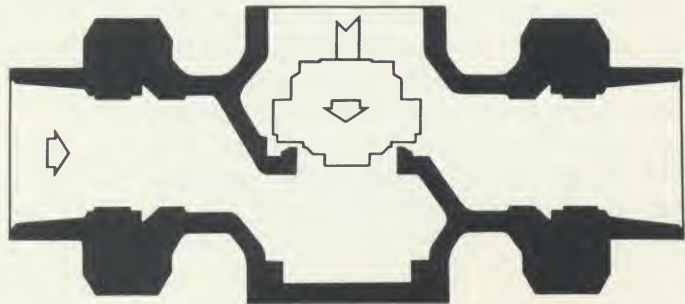
THE POWERS REGULATOR COMPANY • SKOKIE, ILLINOIS
offices in principal cities in the U.S.A. and Canada

replaces
Bulletins 11A,
11B, 11C & 11D

SINGLE SEAT
COMPOSITION DISC

DIRECT ACTING REGULATOR

With an increase in temperature at the bulb, the valve plug gradually closes.



This valve body construction is particularly recommended for use with steam and water at pressure differentials below 50 psi and where dead end service is important.*

SPECIFICATIONS – Single Seat Composition Disc

BODY – Valves are direct acting (spring opened). Valve bodies are bronze with female unions and are available in the following line sizes: ½", ¾", 1", 1¼" and 1½".

Valve plug is equipped with composition disc.

NO. 11 RE

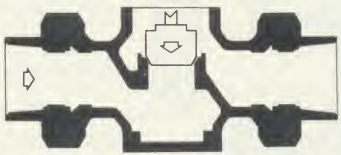
TEMPERATURE RANGES – BULB DI

TEMPERATURE RANGES			
SINGLE OR DOUBLE SEAT VALVE SIZES ½" thru 2½"		WATER MIX VALVE SIZE ½" thru 2"	BULB DIMENSIONS CAPILLARY LENGTH
DIRECT ACTING	REVERSE ACTING		
10 to 70F 55 to 115F 85 to 145F	0 to 60F 45 to 105F 70 to 130F 90 to 150F	10 to 60F 55 to 115F 80 to 140F 100 to 160F	1" x 20" bulb 8 or 15 ft. capillary
110 to 170F 130 to 190F 140 to 200F 170 to 230F 200 to 250F 230 to 290F 270 to 330F	110 to 150F 120 to 180F 150 to 210F 185 to 245F 220 to 280F 255 to 315F	110 to 160F 135 to 195F 160 to 220F 200 to 250F	1" x 9" bulb 8 or 15 ft. capillary

SINGLE SEAT
STAINLESS STEEL TRIM

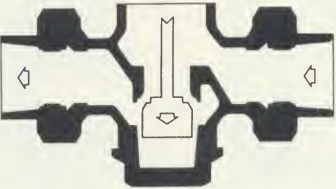
DIRECT ACTING REGULATOR

With an increase in temperature at the bulb, the valve plug gradually closes.



REVERSE ACTING REGULATOR

With an increase in temperature at the bulb, the valve plug gradually opens.



This valve body is particularly recommended for use with steam or water at pressure differentials above 50 psi and where tight shutoff is important.*

NO. 11 REGULATORS WITH
INDICATING DIAL THERMOMETER
ARE AVAILABLE IN
THESE RANGES

SPECIFICATIONS – Single Seat Stainless Steel Trim

BODY – Valves are available in direct acting (spring opened) and reverse acting (spring closed). Valve bodies are bronze with female unions and are available in the following line sizes: ½", ¾", and 1". Special low capacity models are available with V-port plug in the ½" size.

SPECIFICATIONS – Double Seat

BODY – Valves are direct acting (spring opened) and reverse acting (spring closed). Bodies are available in the following line sizes: 1", 1¼", 1½", 2", 2½", 3" and 4".

Sizes 1" to 2" have bronze bodies with union ends. Sizes 2½" to 4" have iron bodies with flanged ends. Trim is available in either bronze or stainless steel.

REGULATORS

SIZES – CAPILLARY LENGTHS

TEMPERATURE RANGES			
WATER MIX VALVE SIZE 2½", 3" & 4"	DOUBLE SEAT VALVE SIZES 3" and 4"		BULB DIMENSIONS CAPILLARY LENGTH
	DIRECT ACTING	REVERSE ACTING	
120 to 150F	10 to 70F	45 to 105F	1¼" x 24" bulb 15 ft. capillary
140 to 170F	55 to 115F	70 to 130F	
170 to 200F	85 to 145F	90 to 150F	
	110 to 170F	110 to 150F	1" x 20" bulb 15 ft. capillary
	130 to 190F	120 to 180F	
	140 to 200F	150 to 210F	
	170 to 230F		
	200 to 250F		
	230 to 290F		
	270 to 330F		
	SINGLE OR DOUBLE SEAT		WATER MIX
	Direct Acting	Reverse Acting	
→	55 to 115F	45 to 105F	55 to 115F
	85 to 145F	70 to 130F	80 to 140F
	110 to 170F	90 to 150F	100 to 160F
	130 to 190F	110 to 150F	110 to 160F
	140 to 200F	120 to 180F	135 to 195F
	170 to 230F	150 to 210F	160 to 220F

SPECIFICATIONS – Water Mix

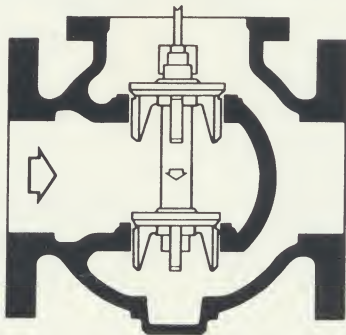
BODY – Valve bodies are available in the following line sizes: ½", ¾", 1", 1¼", 1½", 2", 2½", 3" and 4".

Sizes ½" to 2" have bronze bodies with composition disc and screwed ends. Sizes 2½" to 4" have iron bodies with bronze trim and flanged ends.

DOUBLE SEAT

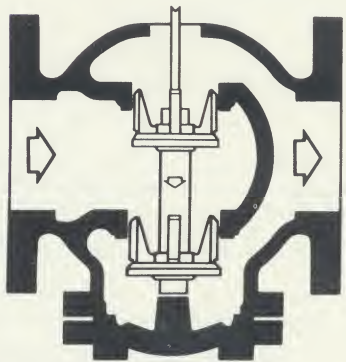
DIRECT ACTING REGULATOR

With an increase in temperature at the bulb, the valve plug gradually closes.



REVERSE ACTING REGULATOR

With an increase in temperature at the bulb, the valve plug gradually opens.

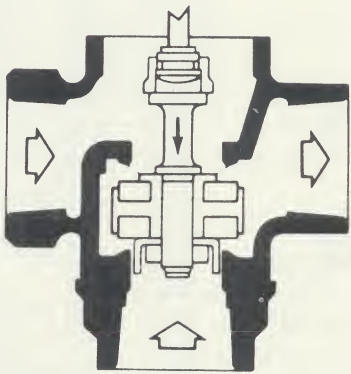


This valve body construction is particularly recommended for use with steam or water where high flow or high pressure differential is required and tight shutoff is not important. Bronze trim is suitable for pressure differentials below 50 psi and stainless steel trim is recommended above 50 psi.*

WATER MIX

With an increase in temperature at the bulb, the valve plug gradually moves toward the lower seat.

With a decrease in temperature at the bulb, the valve plug gradually moves toward the upper seat.

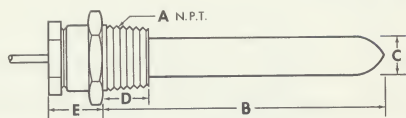


This valve body construction is particularly recommended for use in mixing hot and cold water supplying tempered water at constant temperature.*

*See No. 11 Valve Sizing Supplement for maximum allowable pressure differentials for specific valve sizes.



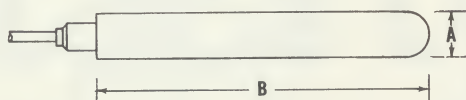
BULBS - Styles, Materials, Dimensions



STYLE D, for liquid immersion, for pressure-tight bushing and union connection. Bulb & Capillary Material - copper or type 347 stainless steel

STYLE D BULB

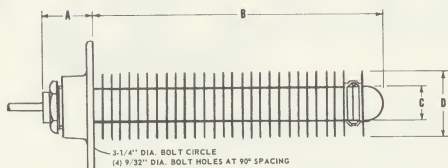
NOMINAL SIZE	A	B	C	D	E
1" x 9"	1	9	15/16	15/16	1-1/4
1" x 20"		20			
1-1/4" x 24"	1-1/4	23-11/16	1-3/16	1-5/32	1-1/2



STYLE J, for open tank immersion. Bulb & Capillary Material - uncoated capillary and bulb is available in type 347 stainless steel. Two types of coating are available: 1. Teflon coated capillary and bulb
2. Polyvinyl chloride coated capillary & bulb

STYLE J BULB

NOMINAL SIZE	A	B	
1" x 9"	15/16	8-13/16 CPR.	8-3/4 ST. STL.
1" x 20"		20-15/16 CPR.	20-1/2 ST. STL.

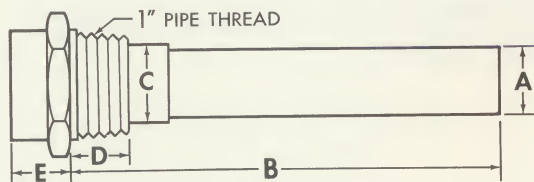


STYLE G, with copper fins for air exposure. Bulb and Capillary Material - copper

STYLE G BULB

NOMINAL SIZE	A	B	C	D
1" x 9"	1-1/2	8-11/16	15/16	2
1" x 20"	1-1/2	20-13/16	15/16	2
1-1/4" x 24"	2	24	1-3/16	2-1/4

WELLS - Materials, Dimensions



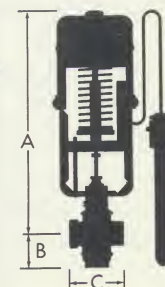
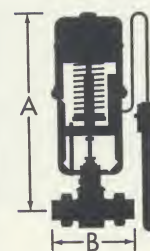
WELL MATERIAL	A	C	D	E	1" x 9" Bulb	1" x 20" Bulb	1-1/4" x 24" Bulb
CHROME PLATED COPPER	1.000"	1.134"	15/16"	13/16"	10"	22"	
	1.250"	1.250"	1-5/32"	1"			25-1/4"
347 STAINLESS STEEL	1.000"	1.000"	1"	1-5/8"	8-7/8"	19-7/8"	
	1.264"	1.390"	1-1/8"	1-1/16"			24-7/16"
316L ST. STL.	1.000"	1.140"	15/16"	13/16"		20-7/32"	
CARBON ST. MONEL 316L ST. STL.	1.125"	1.125"	1"	1-13/16"	8-11/16"		

HOW TO ORDER

1 - Valve Body Style	}	See pages 2 and 3
2 - Valve Size		See Valve Sizing Supplement
3 - Temperature Range	}	See center table, pages 2 & 3
4 - Bulb Dimensions		
5 - Capillary Length		
6 - Bulb Style	}	See top of page 4
7 - Bulb and Capillary Material		
8 - Accessories:	}	Indicator - Center table, bottom portion, pages 2 and 3
		Stem Lubricator - page 1
		Wells - page 4

NO. 11 REGULATOR DIMENSIONS

VALVE TYPE	VALVE SIZE	A		B
SINGLE SEAT	1/2	14-1/8		5-5/8
	3/4	14-1/4		6
	1	14-3/8		6-3/4
	1-1/4	14-5/8		7-3/8
	1-1/2	14-7/8		8
DOUBLE SEAT	1	D.A. 15	R.A. 15	6-3/4
	1-1/4	15-1/4	15-1/4	7
	1-1/2	15-3/8	15-3/8	8
	2	16-1/2	16-1/2	9-5/8
	2-1/2	18-1/4	16-5/8	9-1/8
	3	18-1/4		9-1/8
	4	18-1/2		10-3/4
WATER MIX	1/2	14-1/2		1-3/4
	3/4	14-11/16		2-1/8
	1	14-3/4		2-7/16
	1-1/4	15-1/16		2-5/8
	1-1/2	15-5/16		2-7/8
	2	15-11/16		3-5/16
	2-1/2	20-1/4		7-1/4
	3	20-5/8		7-1/2
	4	21-3/8		9-3/16



POWERS SERIES 410

HYDROGUARD®

PRESSURE EQUALIZING SHOWER-BATH CONTROL

COMFORT AND CONVENIENCE

The Series 410 Hydroguard pressure equalizing shower-bath control provides protection for the bather against sudden bursts of hot or cold water which frequently result in scalding or injuries from slipping and falling in the tub. Pressure fluctuations in the supply water are immediately sensed and corrected by the diaphragm actuated pressure equalizing chamber. Failure of cold water supply shuts off delivery to tub or shower.

STYLE

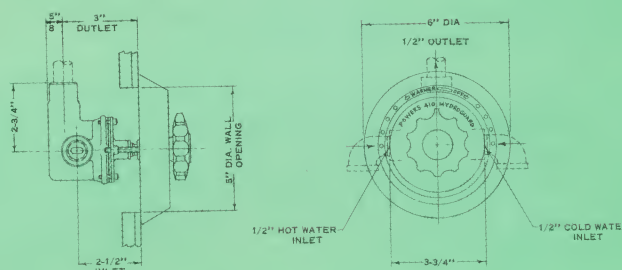
The 410 Hydroguard's smart appearance and clean, simple lines harmonize with any decor. Tile walls are unmarred by multiple controls or other extra equipment.

ECONOMY

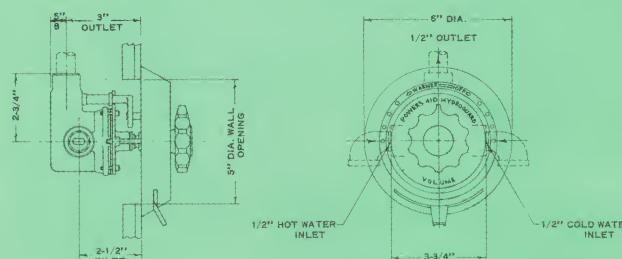
One unit simplifies installation by eliminating extra tile cutting and piping. Built-in shutoff valve with composition discs eliminates need of external shutoff valve. Conserves water and fuel by maintaining desired bathing temperatures.

FEATURES

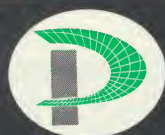
- Replaceable pressure equalizing cartridge. Cartridge contains all the moving parts and can be replaced in minutes. No calibration or adjustments required.
- Replaceable hot and cold water shutoff disc
- Poppet type equalizing valve assembly. Poppet valve eliminates sticking due to lime build-up or foreign particles in the supply.
- Automatic shutoff of hot and cold water when the mixer is in the off position
- Adjustable maximum temperature stop
- Factory installed roughing-in template for easy installation



POWERS SERIES 410 HYDROGUARD, Model 411-0000, for concealed piping. Built-in shutoff valve with maximum temperature stop. Replaceable cartridge to include poppet-type pressure equalizing chamber. 1/2" pipe connections.



POWERS SERIES 410 HYDROGUARD, Model 412-0000, for concealed piping. Integral volume control valve. Built-in shutoff valve with maximum temperature stop. Replaceable cartridge to include poppet-type pressure equalizing chamber. 1/2" pipe connections.



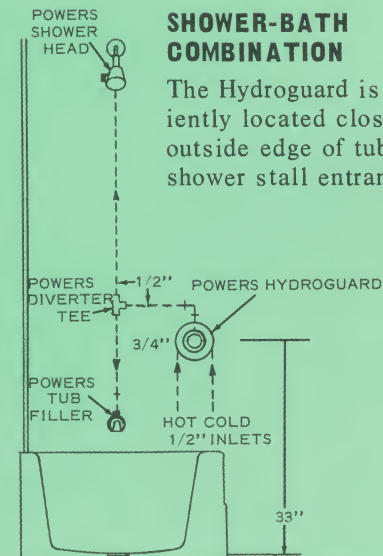
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SHOWERS ... by POWERS

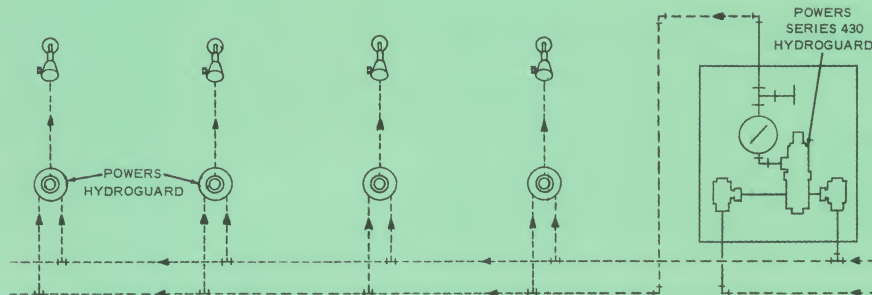
SHOWER-BATH COMBINATION

The Hydroguard is conveniently located close to the outside edge of tub or shower stall entrance.



MULTIPLE SHOWER INSTALLATIONS

For multiple showers in schools, clubs and industrial plants. Whether all showers are operated simultaneously or used individually, every bather is assured of safety and comfort.



SERIES 410 HYDROGUARD ACCESSORIES

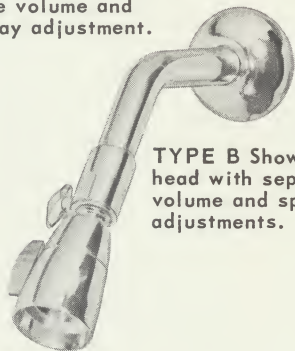
TUB FILLER AND SHOWER HEAD

The Powers Shower Head is equipped with volume control, ball joint, spray adjustment, self-cleaning features, arm and flange. Finish on all exposed parts is polished chrome.

Powers Tub Filler is furnished with a diverter latch to allow the Hydroguard to be used for tub filling or for showers. A Diverter Tee is also provided with the filler and permits a simple piping arrangement between the shower head and tub filler.



TYPE A Self Cleaning Shower Head with separate volume and spray adjustment.



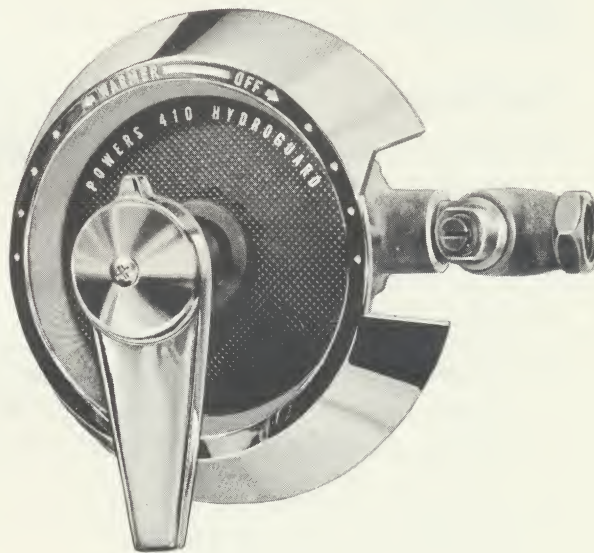
TYPE B Shower head with separate volume and spray adjustments.



SPOUT with built-in diverter latch and separate diverter tee.

CHECKSTOP VALVES

Recommended for convenient shutdown of individual Hydroguards to permit service and inspection. Check feature prevents supply water interchange if a shutoff valve is installed in the outlet of the Hydroguard.



A SERIES 410 HYDROGUARD with lever handle is available as shown above. Cut-away view above shows easy accessibility to the inlet accessories by merely removing the Hydroguard dial plate.

POWERS SERIES 420

HYDROGUARD®

THERMOSTATIC SHOWER-BATH CONTROL

AN INVESTMENT IN SAFETY

The Series 420 Hydroguard *thermostatic* shower-bath control provides protection for the bather against sudden bursts of hot or cold water which frequently result in scalding or injuries from slipping and falling in the tub.

Temperature and pressure fluctuations in the supply water are immediately sensed and corrected by a powerful liquid-filled *thermostatic* motor. Safety limit prevents delivery above 115F. Failure of cold water supply shuts off delivery to tub or shower.

COMFORT AND CONVENIENCE

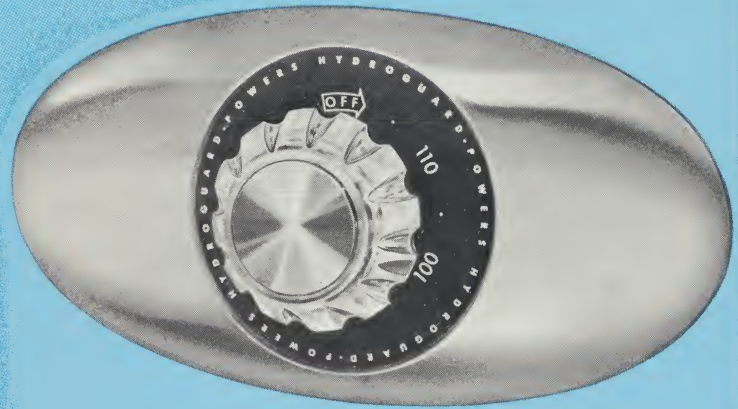
Delivery temperature remains exactly as the bather wants it. For baths there is no need to mix and repeatedly test the water temperature. Just set it, it won't change. For showers, the single handle control is perfect for those who like to shower hot and gradually cool down. A Hydroguard maintains a safe shower, regardless of the use of other plumbing facilities. With a Hydroguard you shower relaxed.

STYLE

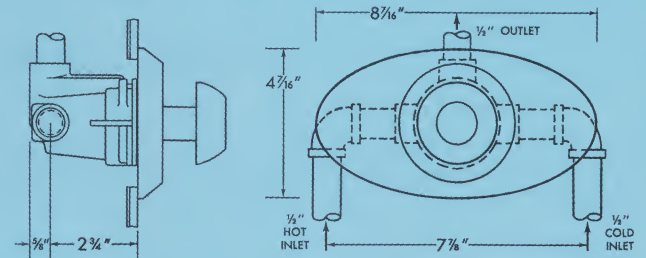
The 420 Hydroguard's smart appearance and clean, simple lines harmonize with any decor. Tile walls are unmarred by multiple controls or other extra equipment.

FEATURES

- Only one moving part — thermostatic motor and mixing valve assembly. Parts are easily accessible from the front
- Standard range 65 to 115F. Concealed adjustment permits resetting the maximum temperature after installation
- Noncorrosive internal parts insure trouble-free operation and long service life
- Top or bottom outlet simplifies installation by eliminating extra tile cutting and piping
- Built-in shutoff valve with composition disc eliminates the need of external shutoff valve

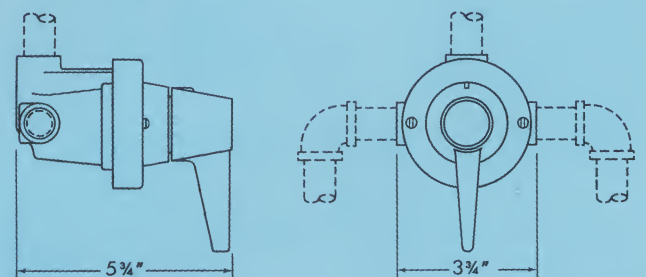


CONCEALED PIPING



POWERS SERIES 420 HYDROGUARD for concealed piping, maximum temperature setting at 115F, with liquid filled thermostatic element, built-in shutoff valve, poppet type mixing valve and top or bottom outlet.

EXPOSED PIPING



POWERS SERIES 420 HYDROGUARD for exposed piping, maximum temperature setting at 115F, with liquid filled thermostatic element, built-in shutoff valve, poppet type mixing valve and top or bottom outlet.



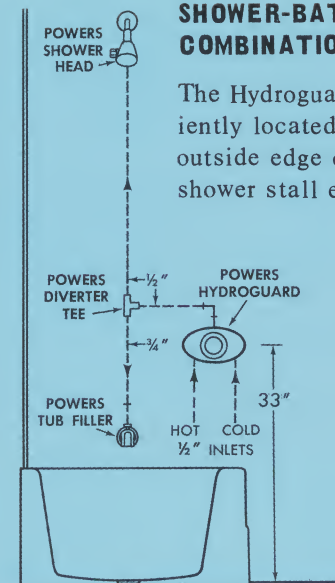
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SHOWERS ... by POWERS

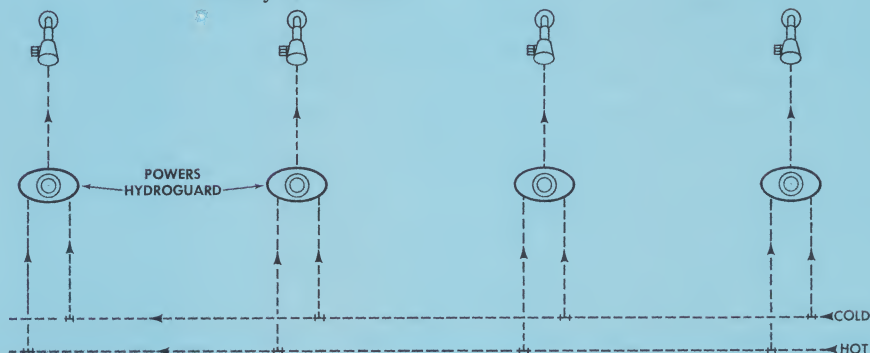
SHOWER-BATH COMBINATION

The Hydroguard is conveniently located close to the outside edge of tub or shower stall entrance.



MULTIPLE SHOWER INSTALLATIONS

For multiple showers in schools, hospitals, other institutions, clubs and industrial plants. Whether all showers are operated simultaneously or used individually, every bather is assured of safety and comfort.



SERIES 420 HYDROGUARD ACCESSORIES

TUB FILLER AND SHOWER HEAD

The Powers Shower Head is equipped with volume control, ball joint, spray adjustment, self-cleaning features, arm and flange. Finish on all exposed parts is polished chrome.

Powers Tub Filler is furnished with a diverter latch to allow the Hydroguard to be used for tub filling or for showers. A Diverter Tee is also provided with the filter and permits a simple piping arrangement between the shower head and tub filler.



TYPE A Self Cleaning Shower Head with separate volume and spray adjustment.

TYPE B Shower head with separate volume and spray adjustments.

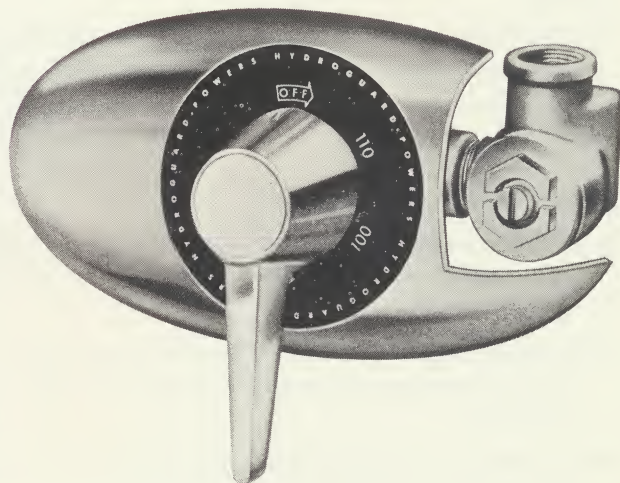
SPOUT with built-in diverter latch and separate diverter tee.

CHECKSTOP VALVES

Recommended for convenient shutdown of individual Hydroguards to permit service and inspection. Check feature prevents supply water interchange if a shut-off valve is installed in the outlet of the Hydroguard.

COMBINATION STRAINER-CHECKSTOPS

An extremely compact and readily accessible fitting. Stop valves permit shutting off the inlet water supplies to individual Hydroguards for inspection and cleaning of strainer screens. The strainers prevent foreign particles from entering the Hydroguard and interfering with its operation. Check valves prevent interchange of inlet supplies when a shutoff valve is in the Hydroguard outlet.



A SERIES 420 HYDROGUARD with lever handle is available as shown above. Cut-away view above shows easy accessibility to the inlet accessories by merely removing the Hydroguard dial plate.

POWERS SERIES 430 HYDROGUARD

**For THERMOSTATIC CONTROL of
SHOWERS, HYDROTHERAPY and
TEMPERED WATER SERVICE**

PROTECTION — The Powers Series 430 Hydroguard *thermostatically* blends hot and cold water to the desired delivery temperature. Dependably safe water temperature is always available for all types of group showers, hot water line control, quench tanks and other industrial processes. The Series 430 Hydroguard is designed to maintain uniform discharge temperature despite variations of pressure or temperature in the plumbing system.

TRIPLE SAFETY — 1. In the event of cold water supply failure, the thermostatic element closes the hot water inlet. All flow from the Hydroguard is immediately prevented until the cold water pressure returns.

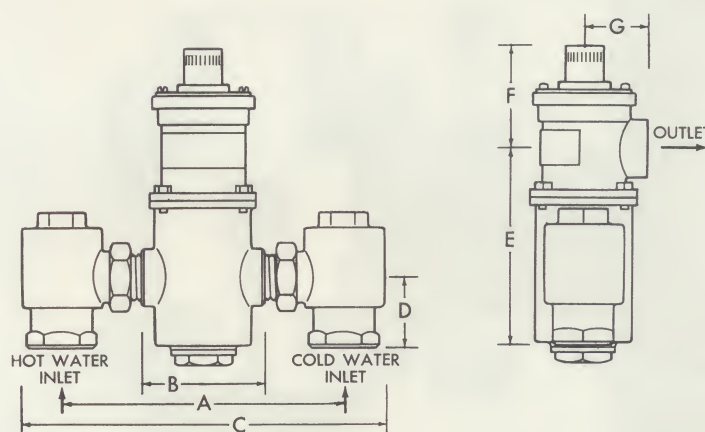
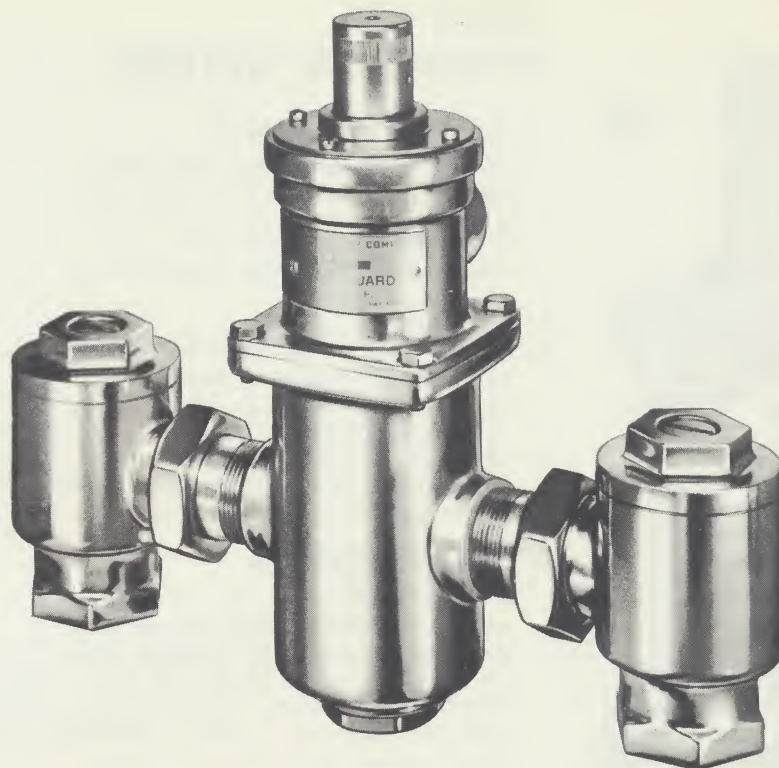
2. In the event of hot water supply failure, the thermostatic element closes the cold water inlet. Again flow is prevented and will automatically return to its original temperature when hot water pressure returns.

3. In event of thermostatic element failure, the "fail safe" feature closes both inlets. Complete protection to the bather or control process is assured.

ACCURACY — Series 430 Hydroguard delivery temperature will hold to within ± 2 degrees F. under any one of these conditions:

(a) up to 75% drop in inlet pressures,
(b) a 45 degree fluctuation in hot water supply temperature, (c) up to an 85% restriction of rated discharge flow.

ECONOMY — Conserves water and fuel by maintaining desired delivery temperature. Single dial control permits immediate selection of delivery water temperature without juggling multiple hand valves.



DIMENSIONS

MODEL	INLETS	OUTLET	A	B	C	D	E	F	G
431	3/4" NPT	3/4" NPT	8 3/16"	3 7/16"	10 3/8"	1 13/16"	5 13/16"	3 1/4"	1 1/16"
432	3/4" NPT	1" NPT	8 3/16"	3 7/16"	10 3/8"	1 13/16"	5 3/16"	3 3/8"	1 15/16"
433	1 1/4" NPT	1 1/4" NPT	10 1/4"	4 7/16"	13 3/16"	2 1/2"	7"	3 13/16"	2 1/4"
434	1 1/4" NPT	1 1/2" NPT	10 1/4"	4 7/16"	13 3/16"	2 1/2"	6 13/16"	3 3/4"	2 3/4"

CAPACITIES

CAPACITY IN G.P.M. AT VARIOUS PRESSURE DIFFERENTIALS, 140F HOT INLET, 60F COLD INLET AND 100F DELIVERY TEMPERATURE.								
MODEL	PRESSURE DIFFERENTIAL IN PSI							
	5	10	20	30	45	60	75	100
431	7.5	11	16	20	25	29	33	38.5
432	15	20	30	36	45	52	58	67
433	24	35	51	64	80	93	105	123
434	40	55	82	101	125	146	165	190



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POWERS
SERIES 430
HYDROGUARD

BULLETIN
12 C

SERIES 430 HYDROGUARD FEATURES

1. THERMOSTATIC ELEMENT

The powerful liquid-filled thermostatic element exerts a positive linear force in response to the slightest variations of blended water temperature. The thermostat measures the temperature of all water discharged.

2. BALANCED HOT and COLD VALVES

Independently seated hot and cold water inner valves minimize the effect of inlet pressure variations. These self-aligning bronze valves and seats eliminate valve binding or water leakage that are always present in sleeve or plunger type valves.

3. FLANGED OUTLET and UNION INLETS

Infinite variations of inlet and outlet piping arrangements are possible. The Hydroguard may be installed in any position, yet functions perfectly. For occasional servicing it may be removed intact, without disturbing the piping.

4. TEMPERATURE ADJUSTMENT

After installation, the maximum desirable delivery temperature may be lowered or raised by means of a simple concealed adjustment screw. The temperature selection knob may also be locked into position. This prevents unauthorized personnel from tampering with the delivery temperature.

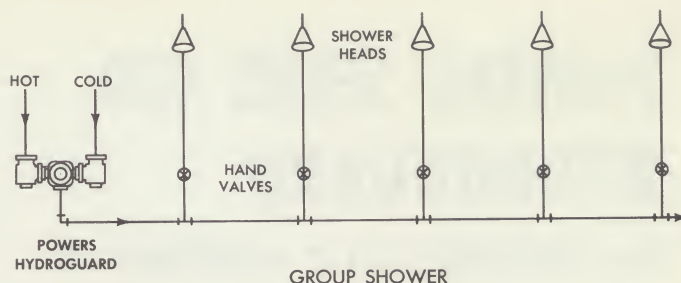
ACCESSORIES

5. COMBINATION STRAINER-CHECK-STOPS

STRAINERS—The bronze strainers are readily accessible for cleaning without removing the Hydroguard from the line.

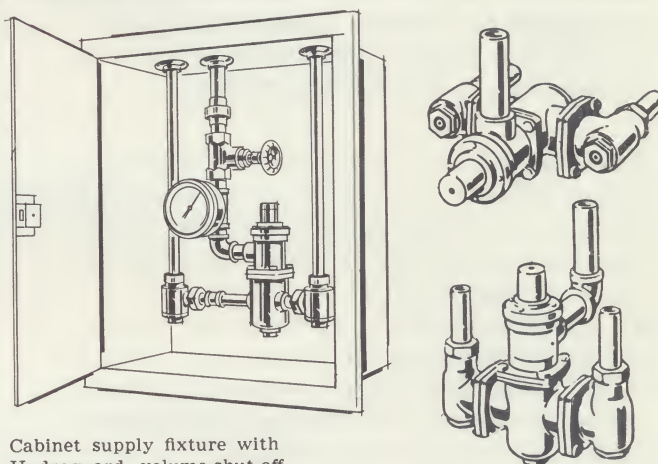
CHECK VALVES—Prevent interchange of hot and cold water through the Hydroguard when a volume-shut-off valve is installed on the Hydroguard outlet.

STOP VALVES—Permit shutdown of individual Hydroguards for servicing the strainers.



GROUP SHOWER CAPACITY TABLE

MODEL	NUMBER OF 5 G.P.M. SHOWER HEADS SERVED	
	MINIMUM	MAXIMUM
431	1	5
432	2	9
433	3	16
434	5	25



Cabinet supply fixture with Hydroguard, volume-shut-off valve and dial thermometer

STEEL CABINETS

Each Series 430 Hydroguard can be supplied with a thermometer and shut-off valve installed in a steel cabinet. The Hydroguard, accessories and piping are polished chrome plated. Cabinets are white baked enamel for wall or recessed mounting. Stainless steel cabinets are also available.

SPECIFICATIONS

FINISH — Satin sprayed or polished chrome plated.

BODY — Brass with non-corrosive parts.

RANGES — 65F to 115F Standard.
85F to 160F Available.

ACCURACY — ± 2 degrees fahrenheit.

CAPACITY 431 25 GPM 433 80 GPM
at 45 psi 432 45 GPM 434 125 GPM

TYPICAL SPECIFICATIONS

Powers (Series 431, 432, 433 or 434) Hydroguard, capacity (25, 45, 80 or 125) GPM at 45 PSI, maximum temperature setting of (115F or 160F). Liquid filled thermostatic element, equipped with "fail-safe" feature, balanced hot and cold water valves, strainer-check-stops, satin sprayed or polished chrome plated finish.

Printed in U.S.A. The Powers Regulator Company 12C JANUARY, 1964

THE POWERS REGULATOR COMPANY · SKOKIE · ILLINOIS

POWERS SERIES 440

FOTOPANEL®

THERMOSTATIC TEMPERATURE CONTROL for the film & x-ray industry

Color film manufacturers have long recognized the importance of maintaining proper water temperatures during film processing. Because valuable negatives have been destroyed by erratic water temperatures, film manufacturers often specify that temperatures be maintained to $\pm 1/2^\circ\text{F}$ during processing. Only a thermostatic mixing device can protect against varying water temperatures and water pressures — and assure stable water temperatures for all types of film processing.

The Powers 440 Fotopanel mixes hot and cold water thermostatically to deliver tempered water at precisely the temperature selected. The vernier adjustments permit accurate selection of temperature and volume. Once the temperature and flow rate have been preset, you need only to flick an on-off switch to stop or start your process.

The Powers 440 Fotopanel assures better quality negatives and at the same time avoids expensive waste of time and materials.

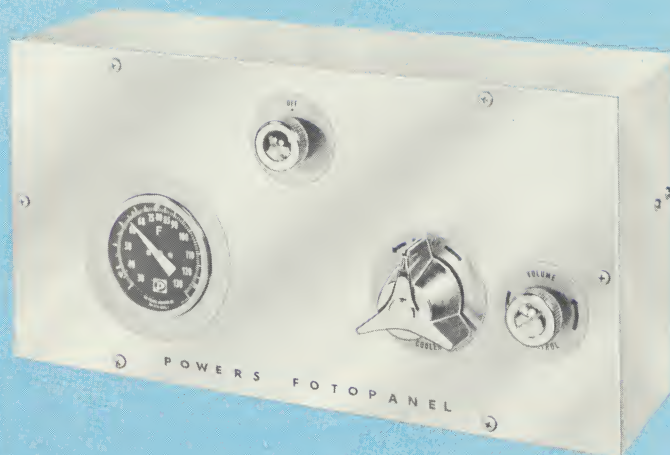
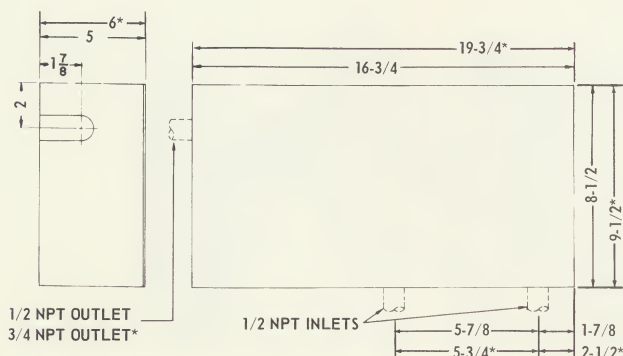
SPECIFICATIONS

POWERS SERIES 440 FOTOPANEL, MODELS 440-1000 and 440-3000, WITH UNION STRAINER CHECKSTOPS.

Consists of:

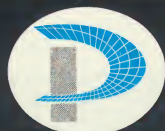
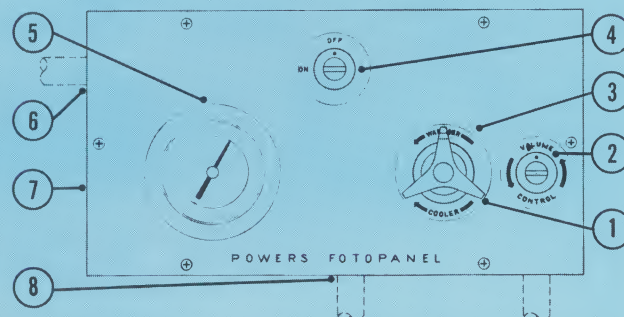
- Thermostatic mixing valve with poppet type valve and vernier temperature adjustment.
- Separate volume control and shutoff valves.
- Dial thermometers with recalibration screw.
- Vacuum breaker mounted in outlet.

All enclosed in a stainless steel panel and cabinet for wall or deck mounting. Model 440-1000 has 1/2" inlets and 1/2" outlet with capacity 1 to 7 GPM at 45 psi differential. Model 440-3000 has 1/2" inlets and 3/4" outlet with capacity 5 to 15 GPM at 45 psi differential.



FEATURES

- THERMOSTATIC MIXING VALVE** is the proven Powers Series 420 Hydroguard with poppet type mixing valve.
- SEPARATE VOLUME CONTROL VALVE.** Adjust the volume control valve to the required flow. Then using the
- SEPARATE VERNIER TEMPERATURE ADJUSTMENT.** Set the handle at the required discharge temperature and the
- SEPARATE SHUTOFF VALVE** is now the only adjustment required. With the temperature and the flow preset, it requires only the flick of the on-off switch to start up your process.
- DIAL THERMOMETER** located in the tempered water outlet accurately measures the temperature. A recalibration screw is standard on the Powers dial thermometer.
- 1/2" VACUUM BREAKER** located in the tempered water outlet provides a quick and easy connection to the piping supplying the water jacket or sink.
- NO UNSIGHTLY PIPING.** All piping and valves are concealed behind a stainless steel panel for easy wall or deck mounting.
- 1/2" UNION INLETS** for quick and easy hook-up of the supply piping. Inlet strainer check-stops are standard with the Fotopanel.



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POWERS FOTOPANEL Model 440-2000

The Model 440-2000 Fotopanel provides the accuracy and dependability of thermostatic control plus a pressure balancing chamber to equalize the supply pressures. This model is particularly recommended for film and x-ray processing wherever extreme pressure upsets are present in the supply lines.



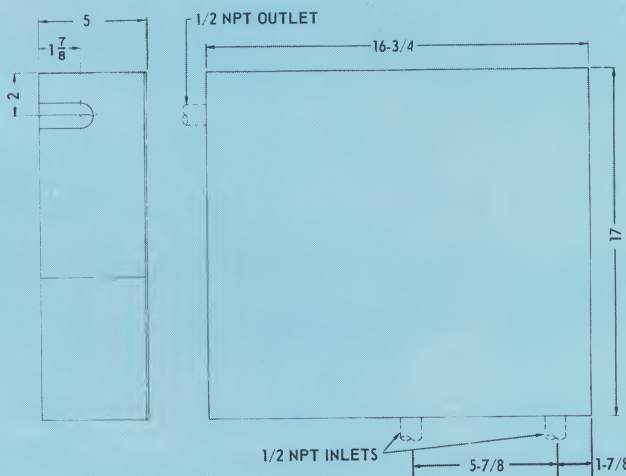
SPECIFICATIONS

POWERS SERIES 440 FOTOPANEL, MODEL 440-2000,
WITH UNION INLET STRAINER CHECKSTOPS.

Consists of:

- (a) Thermostatic mixing valve with poppet type valve.
- (b) Vernier temperature adjustment.
- (c) Pressure balancing chamber to equalize the inlet supply pressures.
- (d) Separate volume control and shutoff valves.
- (e) Dial thermometer with recalibration screw.
- (f) Vacuum breaker mounted in outlet.

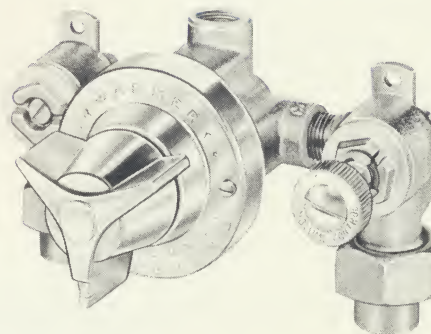
All enclosed in a stainless steel panel and cabinet for wall or deck mounting. 1/2" inlets and 1/2" outlet. Capacity 1 to 6 GPM at 45 psi differential.



POWERS FOTOGUARD® Models 440-1500 & 440-1550



Series 440 Fotoguard for Concealed Piping
Model 440-1550



Series 440 Fotoguard for Exposed Piping
Model 440-1500

POWERS D MIXER

FOR STEAM AND WATER

The Powers Type D Steam and Water Mixer automatically mixes steam and water to deliver a mixture at any desired temperature, regardless of pressure changes in the supply lines. The Type D Mixer has a large capacity and is widely used where it is not practical to install a steam heated storage tank and regulator. This mixer will deliver tempered water for industrial processes, dishwashers, wash fountains, can washers, etc. By turning only one handle, it automatically mixes steam and water to deliver a mixture at any desired temperature, regardless of supply line pressure changes.

The Type D Mixer is available in two sizes — $\frac{1}{2}$ " and $\frac{3}{4}$ ". It is ruggedly built of bronze and all working parts are resistant to corrosion and wear. Its sturdy construction gives many years of dependable service with a minimum of repairs.

PRESSURE EQUALIZING VALVE — A floating piston which controls and equalizes pressure of steam and water before they enter the mixing chamber compensates for pressure variations in the supply lines. Satisfactory operation can be obtained with a minimum supply pressure of 10 lbs. and a maximum supply pressure of 100 lbs.

CHECK VALVES — Built into each inlet to prevent interchange of steam and cold water when mixer is not in use.

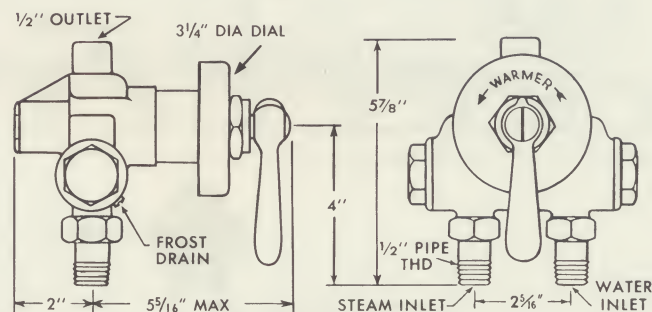
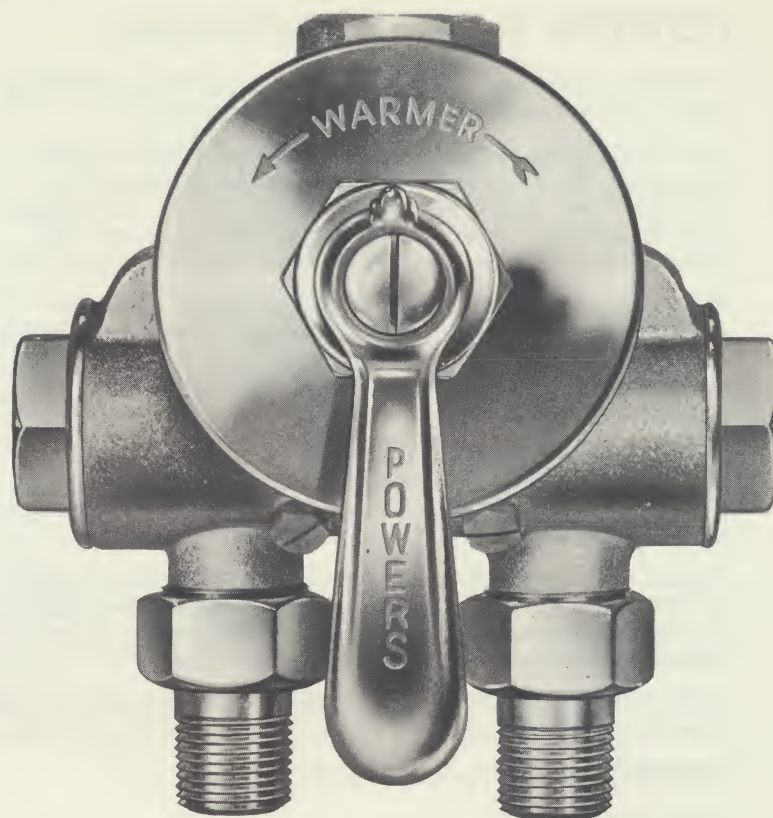
SHUT-OFF VALVES — The temperature adjustment handle also operates an internal delivery shut-off valve. This internal shut-off valve has a composition disc. A shut-off valve or volume adjustment should not be placed in outlet line beyond the mixer.

CAPACITIES

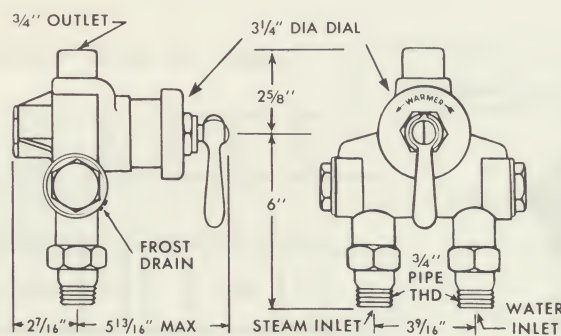
BASED ON DELIVERY TEMPERATURE OF 100° F.				
MIN. STEAM OR WATER PRESSURE, LBS.	10	25	45	60
$\frac{1}{2}$ " MIXER G.P.M.	2½	5	7	8
$\frac{3}{4}$ " MIXER G.P.M.	5	9½	14	16½

BASED ON STEAM & WATER AT 45 PSI & WATER AT 60° F.						
DELIVERY TEMP.	100°	120°	140°	160°	180°	200°
$\frac{1}{2}$ " MIXER G.P.M.	7	5	3½	3	2½	2
$\frac{3}{4}$ " MIXER G.P.M.	14	11½	9½	8	6½	5

Mixing steam with water at 140° F. increases delivery volume approx. 75%.



$\frac{1}{2}$ " TYPE D MIXER



$\frac{3}{4}$ " TYPE D MIXER



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POWERS

**D
MIXER**

14A

BULLETIN

POWERS D MIXER OPERATION

Pressure equalizing valve A is a floating piston controlling entry of steam and water to mixing chamber C.

For illustration assume that steam and water supply pressure is 40 lbs., that the mixer handle is turned to "WARM" and delivery temperature is 105° F. As long as both steam and water supply pressures are equal, the piston will occupy the neutral position shown in Figure 1.

Figure 2 shows what happens when water pressure suddenly drops to 10 lbs., because of use of nearby showers or flush valves. Steam pressure instantly moves the piston so that valves BB maintain the balance of pressures in mixing chamber C to give a 105° F. delivery temperature.

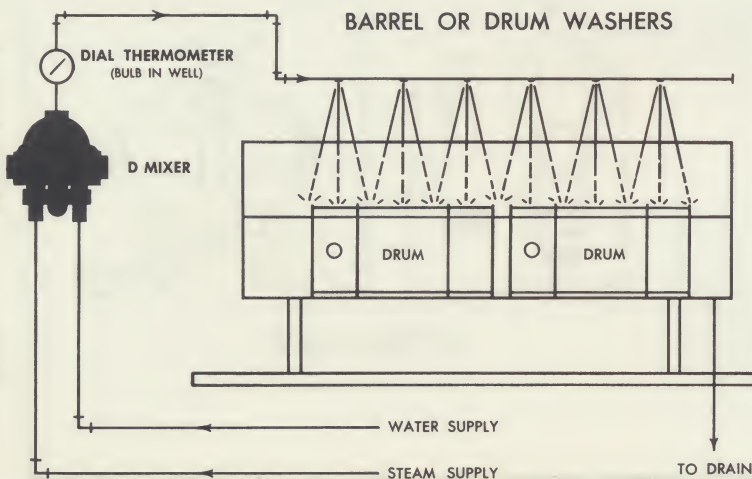
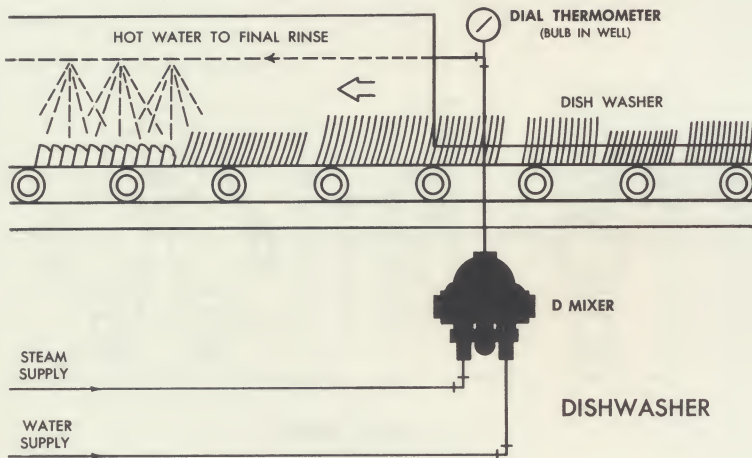
Figure 3 shows position of piston with steam supply suddenly reduced to 10 lbs. Steam and water pressures are instantly balanced and delivery temperature remains constant at 105° F.

Figure 4 shows position of piston with complete failure of water supply. The non-corrosive spring is used only as an additional safeguard to insure instant closing of the steam valve when water supply fails.

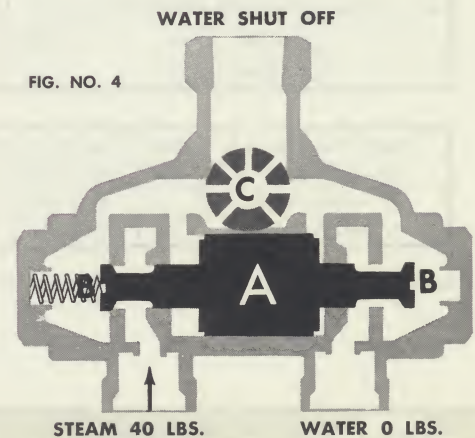
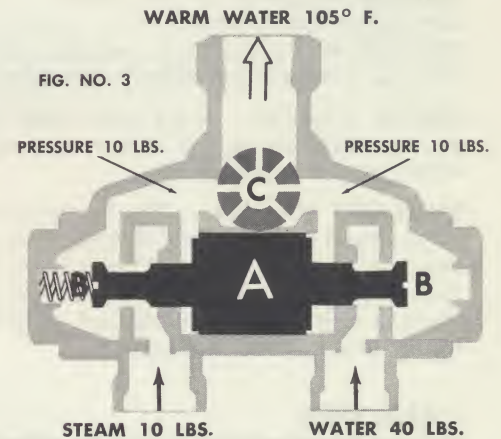
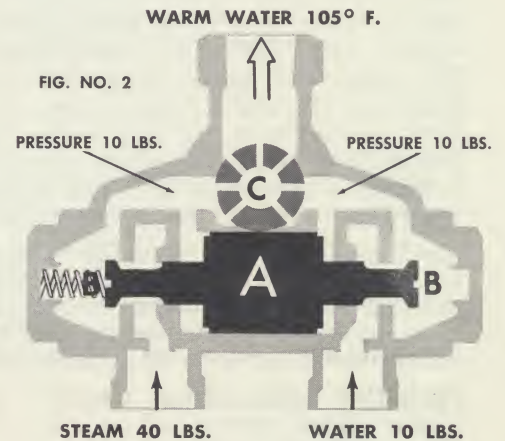
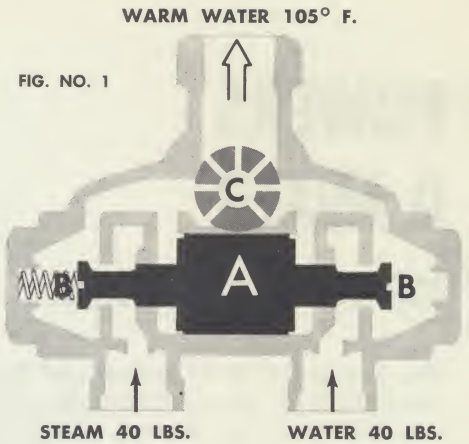
NOTE: The capacity of the D Mixer is determined by the lowest supply pressure. See capacity table on reverse side.

TECHNICAL DATA — Refer to Form P-85

APPLICATIONS



Printed in U.S.A. The Powers Regulator Company 14A JANUARY 1964



THE POWERS REGULATOR COMPANY · SKOKIE · ILLINOIS

POWERS SERIES 100 INSTRUMENTS

Series 100 Instruments provide accurate, dependable control of temperature, pressure or humidity and/or a permanent, continuous time-period record of the value of the controlled variable. These quality instruments are widely used in air conditioning and heating applications and in industrial process control where reliability, indication and a permanent record of control performance are needed.

FEATURES

- Pilot valve is of the nonbleed type, solid brass construction
- Reset mechanism is adjustable — compensates for load variations to give smooth, accurate control
- Proportional band is adjustable from 0 to 150% of the instrument range
- Three types of control: two-position (on-off), proportional, proportional plus reset
- Class II (vapor charge) or Class III (gas charge) thermal systems
- One pen and two pen models with indicator. Pens have durable stainless steel arms and chrome plated points with micrometer adjustment
- Electric motor or spring wound chart drive units for 6, 8, 12 or 24 hour and 7-day charts
- Chart and scale ranges from minus 110F to +1000F. Also centigrade, Reaumur and pressure (psi) requirements
- Control action changeable from direct to reverse by operating personnel
- Universal mounting feature provides for either flush or surface mounting. Ideal for graphic panels
- Aluminum case with hinged cover and rubber dust-proof seal assuring tight closure
- Overall dimensions: 14-11/16" wide by 18-5/8" high by 4-7/8" deep
- Door lock feature prevents tampering by unauthorized personnel
- Attractive light gray crackle enameled finish
- Large window affords 100% visibility of 12" diameter chart and 5" pen movement
- Air connections (1/8" NPT) at bottom of case prevent entry of dust and spilled liquids
- Internal index adjustment
- Customized models to suit many diverse requirements

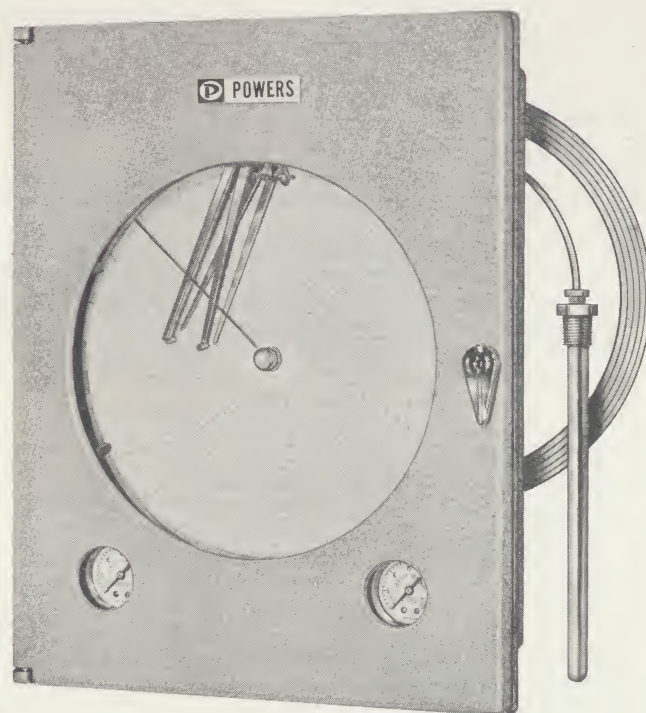


FIGURE 1. TEMPERATURE RECORDER CONTROLLER

MODEL NUMBERS Series 100 Instruments are identified by Model Numbers. The Model Number identifies the *basic* instrument but does not reflect the options which are also an integral part of every instrument. These options are:

1. Scale and Chart number and range
2. Chart drive mechanism and revolution rate
3. Action (direct or reverse)
4. Bulb style and material
5. Capillary length and material
6. Special features

Tables 1 through 3 will serve to illustrate the remarkable versatility of the Series 100 line.

TABLE 1
SERIES 100 – MODEL NUMBER IDENTIFICATION

How to interpret Series 100 Model Numbers: A complete model number consists of five or six digits divided into three positions. Example: Model No. 13 1 13 (Position 1 2 3) <u>Interpretation:</u> Position 1 is number 13 which is: Temperature Class 3, gas filled type Position 2 is number 1 which is: Single Pen Recorder Position 3 is number 13 which is: Single point proportional control See Tables below		
POSITION 1 Type of instrument & actuating element	POSITION 2 Indicating or Recording	POSITION 3 Type of control
12- Temperature, Class 2, vapor pressure type 13- Temperature, Class 3, gas filled type 22- Pressure-bellows movement 23- Pressure spiral movement 432- Combination Temperature-Pressure, Class 3 temperature element (right-hand), bellows pressure element (left-hand) 433- Combination Temperature-Pressure, Class 3 temperature element (right-hand), spiral pressure element (left-hand)	1- Single pen Recorder 2- Two pen Recorder 5- Single pointer Indicator 8- Single cam time cycle Recorder 9- Two cam time cycle Recorder	00- No control, indicates and/or records only 11- Single point, two position control 13- Single point, proportional control 14- Single point, proportional control plus reset *21- Double point, two-position control *23- Double point, proportional control *24- Double point proportional control plus reset 33- Submaster with proportional control 34- Submaster with proportional control plus reset
*NOTE: If two different types of control systems are used, Position 3 becomes two single point control system model numbers with a separating hyphen, such as 13211-13. Give right hand system first. The right hand system is the inner pen on a two pen instrument and is identified by red marking. It is the dry bulb on a two pen dry and wet bulb instrument. The left hand system is the outer pen on a two pen instrument and is identified by green marking. It is the wet bulb on a wet and dry bulb instrument. On a Combination Temperature Pressure instrument, the temperature element is on the right hand side; the pressure element on the left. On a Two Cam Time Cycle instrument, the inner cam resets the right hand system. The outer cam resets the left hand system.		

POWERS FLOWRITE® VALVES

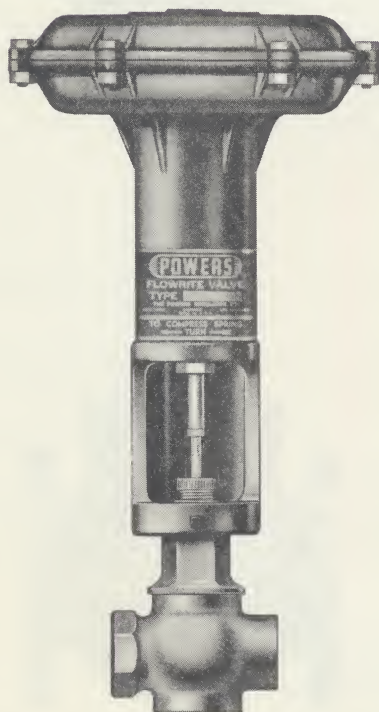
Powers Flowrites are premium quality valves available for a variety of uses in a wide range of sizes. Air or water operated, they are used to control the flow of hot or cold water, or steam. All types include a completely enclosed Powerstroke housing with a molded diaphragm.

FEATURES

- Completely enclosed die cast aluminum housing
- Molded diaphragm
- Self-aligning piston plate assembly
- Cadmium plated spring
- Spring adjustment for split-range sequential operation
- Teflon-asbestos packing rings
- Flexible connection between plug and stem self-seating, better control and long valve wear
- Centerless ground and polished monel stem for smooth operation during the entire valve stroke.

Two top sizes are available: The 8 in. diameter top with an effective area of 28 sq. inches, maximum pressure 35 psi. The 12 in. dia. top with an effective area of 81 sq. inches, maximum pressure 25 psi. Stem lubricators available as an accessory.

VF 591-CD SINGLE SEAT COMPOSITION DISC VALVES



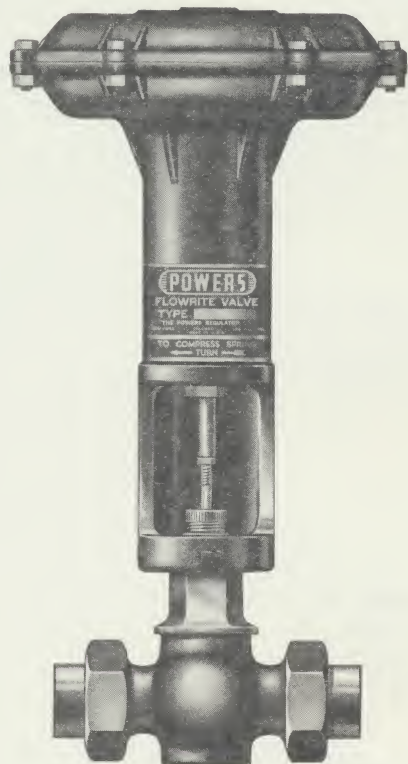
Recommended for installations requiring quick response and tight shutoff. Used for control of steam, hot water or chilled water. Typical applications include steam converters, reheat coils, instantaneous heaters and similar installations. Features a renewable composition disc to meet shutoff requirements.

SPECIFICATIONS

VALVE SIZE (in.)	P R O D U C T N U M B E R				VALVE TRAVEL (in.)		WEIGHT (lbs.)		BODY	SPRING
	NORMALLY OPEN (D.A.*)		NORMALLY CLOSED (R.A.*)							
	8" TOP	12" TOP	8" TOP	12" TOP	D.A.	R.A.	8" TOP	12" TOP		
1/2	591-6360	—	591-6420	—	5/32		20	—	BRONZE, 125 lb. (screwed connections)	5 lb. full travel with 5 psi change (10 lb. available on special order)
3/4	591-6370	—	591-6430	—	7/32		22	—		
1	591-6380	—	591-6440	—	9/32		24	—		
1-1/4	591-6390	—	591-6450	—	11/32		26	—		
1-1/2	591-6400	—	591-6460	—	3/8	5/16	27	—		
2	591-6410	—	591-6470	—	1/2		29	—	IRON, 125 lb. (bronze seats, flanged connections)	
2-1/2	591-6480	591-1560	591-6540	591-1760	5/8		72	107		
3	591-6490	591-1580	591-6550	591-1780	3/4		87	122		
4	591-6500	591-1600	591-6560	591-1800	1		127	162		
5	—	591-1620	—	591-1820	1-1/4		—	220		
6	—	591-1640	—	591-1840	1-1/2		—	260		

*Direct acting — Reverse acting valves

VF 591-V SINGLE SEAT CHARACTERIZED V-PORT VALVES (STAINLESS STEEL TRIM)



Used for steam, hot water, or chilled water applications such as steam convertors, instantaneous heaters, heating coils and similar industrial processes. Meets positive shutoff requirements; has excellent flow control, even with valve in near-closed position. Features stainless steel V-port poppet and seat. See specifications below for choice of valve action, sizes and spring ratings available.

SPECIFICATIONS

VALVE SIZE (in.)	CAPA- CITY	P R O D U C T N U M B E R S				VALVE TRAVEL (in.)	SHIPPING WEIGHT (lbs.)
		NORMALLY OPEN (D.A.*)		NORMALLY CLOSED (R.A.*)			
		5 lb. SPRING	10 lb. SPRING	5 lb. SPRING	10 lb. SPRING		
1/2	15%	591-6000	591-6090	591-6180	591-6270	1/4	23
	30%	591-6010	591-6100	591-6190	591-6280		
	60%	591-6020	591-6110	591-6200	591-6290		
	100%	591-6030	591-6120	591-6210	591-6300		
3/4		591-6040	591-6130	591-6220	591-6310	3/8	25
1		591-6050	591-6140	591-6230	591-6320	1/2	27
1-1/4		591-6060	591-6150	591-6240	591-6330	5/8	30
1-1/2		591-6070	591-6160	591-6250	591-6340	3/4	32
2		591-6080	591-6170	591-6260	591-6350	1	35

All single seat V-Port valves have an 8" top (max. pressure 35 psi), and a bronze (250 psi rated) body with double unions.

*Direct acting - Reverse acting valves

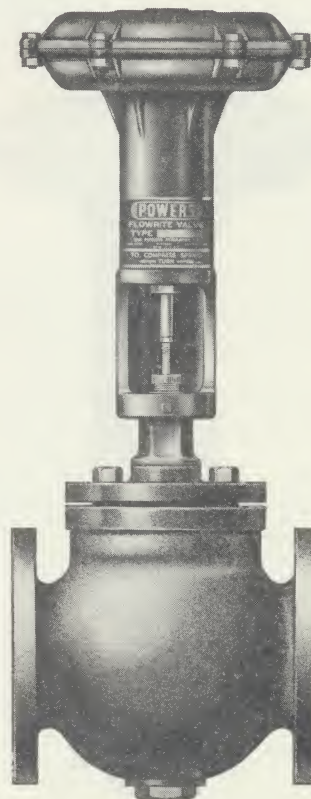
VF 591-DS DOUBLE SEAT VALVES

Used for steam, hot water, or chilled water in high capacity applications such as pressure controllers or vat temperature regulators in industrial processing. Regardless of varying inlet pressures, the force-balanced double throttling plug design assures accurate and steady outlet control. Renewable seats and plugs.

SPECIFICATIONS

TOP DIA. (in.)	VALVE SIZE (in.)	PRODUCT NUMBERS					WEIGHT (lbs.)	SPRING RATING	
		NORMALLY OPEN (D.A.*)		NORMALLY CLOSED (R.A.*)					
		BRONZE TRIM	STAINLESS STL. TRIM	VALVE TRAVEL (in.)		BRONZE TRIM			STAINLESS STL. TRIM
8	1	591-6940	591-7020	3/16		591-6980	591-7090	25	5 lb. — Full travel with 5 psi change (10 lb. spring available on special order)
	1-1/4	591-6950	591-7030	1/4		591-6990	591-6900	27	
	1-1/2	591-6960	591-7040			591-7000	591-6910	28	
	2	591-6970	591-7050	3/8	5/16	591-7010	591-6920	30	
	2-1/2	591-6840	591-7060			591-6870	591-7100	67	
	3	591-6850	591-7070	9/16		591-6880	591-6930	69	
	4	591-6860	591-7080			591-6890	591-7110	122	
12	5	591-7190	—	3/4		591-7220	—	208	
	6	591-7200	—	1		591-7230	—	295	
	8	591-7210	—	1-1/4		591-7240	—	445	

*Direct acting - Reverse acting valves



SUPER FLOWRITE VALVES**SINGLE OR DOUBLE SEAT, TOP AND BOTTOM GUIDED
THREE-WAY MIXING VALVES
THREE-WAY DIVERTING VALVES**

Designed specifically to satisfy requirements demanding exceptional durability for heavy duty operation. Applications include industrial processing, air conditioning and refrigeration. Air, water or oil controlled, the valves will maintain accurate control across extremely wide temperature and pressure ranges. Stroke actuation is individually engineered for specified conditions.

FEATURES

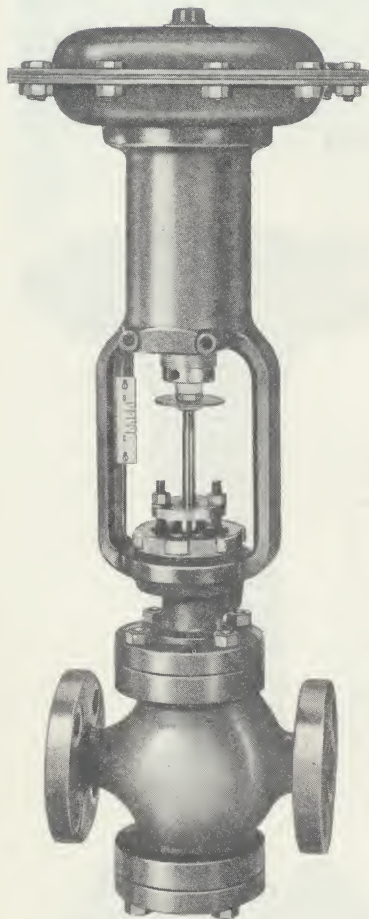
- Nylon reinforced neoprene diaphragm
- Spring adjustment allows 3–15 psi for full valve travel
- Travel indicator for quick reference to valve position
- Packing gland of graphited asbestos or Teflon rings assures a tight seal with minimum friction
- A wide choice of standard or special body materials and end connections are available

SPECIFICATIONS

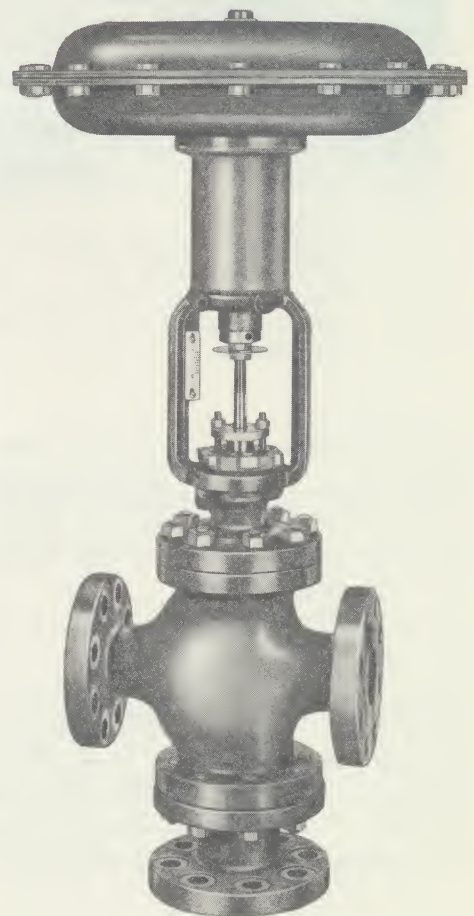
VALVE SIZE (in.)	STROKE (in.)	DIAPHRAGM TOP			END CONNEC- TIONS
		DIAMETER (in.)	EFFECTIVE AREA (sq. in.)	PRESSURE (psig)	
1/2	15/32	9	28	65	Screwed or Flanged
3/4					
1	11/16	12	65	35	
1-1/4					
1-1/2	15/16				
2	1-1/16	15	95	25	Flanged
2-1/2	1-3/16				
3	1-3/8				
4	1-3/4				
5	1-7/8	18	140	40	
6	2-3/8				
8	2-1/2				
10	3	25	300	30	
12	3-1/2				

VALVE TYPE	VALVE ACTION	FLOW CHARACTERISTICS	PLUG DESIGN	GUIDING
Single Seat or Double Seat	N/O or N/C*	True Linear	Solid Contoured	Top and Bottom Guided
		Equal Percentage		
		Modified Linear	V-Port	Skirt or Top and Bottom
		Quick Opening		
3-Way Mixing	Upper Seat N/C	Modified Linear or Quick Opening	V-Port or Quick Opening	Skirt Guided
3-Way Diverting	Upper Seat N/O			
Angle (Single Seat)	N/O	True Linear Equal Percentage or Quick Opening	Solid Contoured (Parabolic)	Stem Guided

*Normally Open or Normally Closed

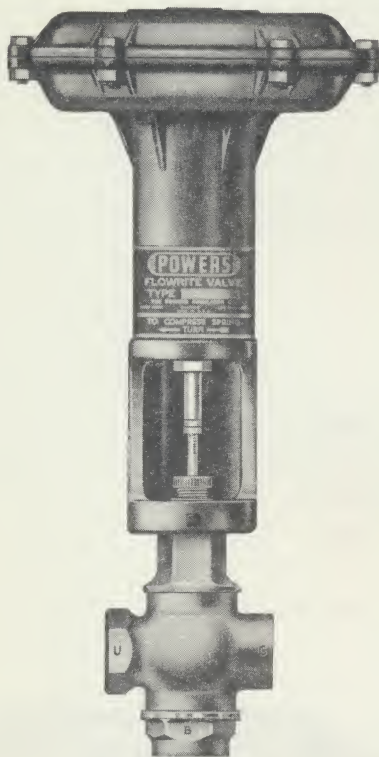


**SUPER FLOWRITE
SINGLE SEAT VALVE**



**SUPER FLOWRITE
MIXING VALVE**

VF 591-WM WATER MIX VALVES



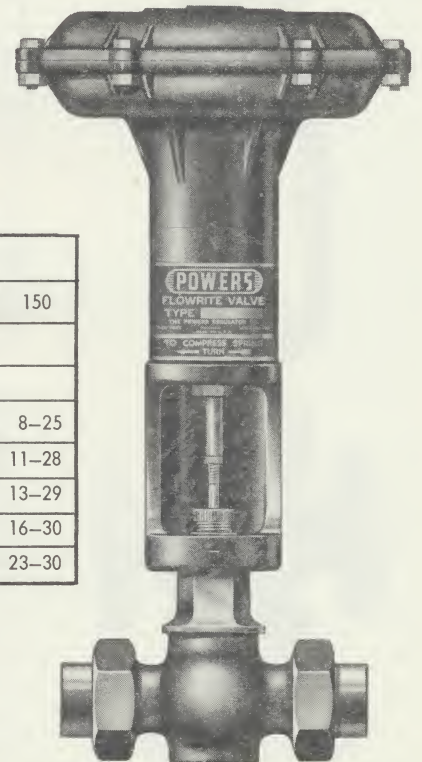
These are triple port valves used for a variety of water mixing and flow bypass applications. Individual flow of hot and cold water input is automatically proportioned to form an output mixture at a predetermined temperature to satisfy demands of the controlling instrument. To minimize stem friction and eliminate water leakage, all valves contain Teflon-coated asbestos packing.

SPECIFICATIONS

VALVE SIZE (in.)	TOP DIA. (in.)	PRODUCT NUMBERS		BODY MATERIAL	CONNECTIONS	VALVE PLUGS			
		SPRING RATING							
		5 lb.	10 lb.						
1/2	8	591-6600	591-6600	Bronze	Screwed Ends	Composition Discs			
3/4		591-6610	591-6670						
1		591-6620	591-6680						
1-1/4		591-6630	591-6690						
1-1/2		591-6640	591-6700						
2		591-6650	591-6710						
2-1/2	12	591-6720	591-6750	Cast Iron	Flanged Ends	Bronze Trim			
		591-4260	—						
3	8	591-6730	591-6760						
	12	591-4280	—						
4	8	591-6740	591-6770						
	12	591-4300	—						
5		591-7250	—	Semi-Steel					
6		591-7260	—						

VF 591-PRV PRESSURE REDUCING VALVES (SINGLE SEAT CHARACTERIZED V-PORT)

Excellent for line pressure reduction of steam, water or air. Pressure downstream of the valve is monitored and tapped for diaphragm operation. Normally open with factory set, adjustable spring ranges. Renewable stainless steel seat and poppet. Bronze body, with double-unions, rated at 250 psi.

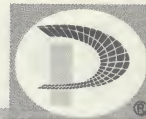


SPECIFICATIONS

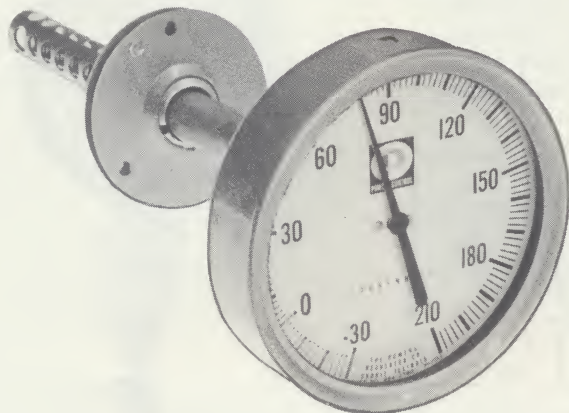
VALVE SIZE (in.)	CAPACITY	PRODUCT NUMBER	VALVE TRAVEL (in.)	SHIPPING WEIGHT (lbs.)
1/2	15%	591-6000	1/4	23
	30%	591-6010		
	60%	591-6020		
	100%	591-6030		
3/4		591-6040	3/8	25
1		591-6050	1/2	27
1-1/4		591-6060	5/8	30
1-1/2		591-6070	3/4	32
2		591-6080	1	35

PRESSURE REDUCTION RANGES

VALVE SIZES	INITIAL PRESSURE (psig)					
	40	60	80	100	125	150
REDUCED PRESSURE RANGES (psig)						
1/2"	6-23			7-24		
3/4"	6-23	7-24	7-24	8-25	8-25	8-25
1"	7-24	8-25	8-25	9-26	10-27	11-28
1-1/4"	8-24	9-25	10-26	11-27	12-28	13-29
1-1/2"	9-24	10-25	11-26	13-28	14-29	16-30
2"	11-21	13-23	15-25	17-27	20-30	23-30



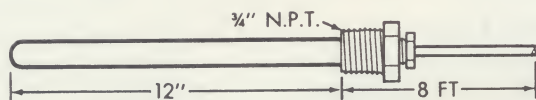
POWERS TM894 BIMETAL THERMOMETER (FOR AIR EXPOSURE)



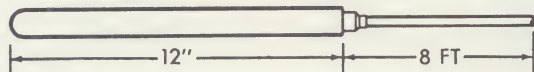
The Powers Bimetal Thermometer is used to measure air temperature in ducts. This instrument features an extra large 4-1/2" dial and large numbers making it easy to read when mounted in hard-to-get-to air ducts. Instrument comes complete with swivel and flange for 45 angular degree mounting. Range is -30 to +210F. Dial has 2 degree graduations. Accuracy is within 2% of scale range. The case and bezel are aluminum with gray finish.

PRODUCT NO. 894-2780

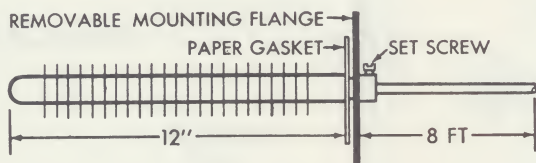
BULBS • WELLS • BUSHINGS



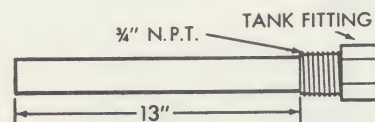
STYLE JD BULB — FOR LIQUID IMMERSION — Has pressure-tight union connection that can be shifted on the capillary.



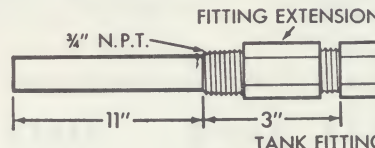
STYLE J BULB — FOR LIQUID IMMERSION — Hang bulb over side of open vat. For immersion in metal finishing and other industrial process tanks use style J bulb (plastic coated).



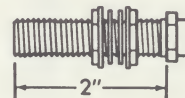
STYLE G BULB — FOR AIR EXPOSURE — Available in copper only and with copper fins; flange permits duct mounting.



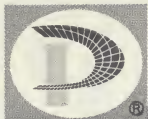
STYLE S WELL — For use with style JD copper bulb only. Permits removal of bulb without draining tank or pipe line.



STYLE LS WELL — For use with 3/4" x 12" style JD copper bulb only. Same as style S well except has a 2-1/2" branch extension for use where pipes, tanks, etc. are insulated.



STYLE C BUSHING — For use with style JD bulbs where tank or vat will not permit threading for standard bushing. Furnished in brass only, complete with washers and lock nuts.



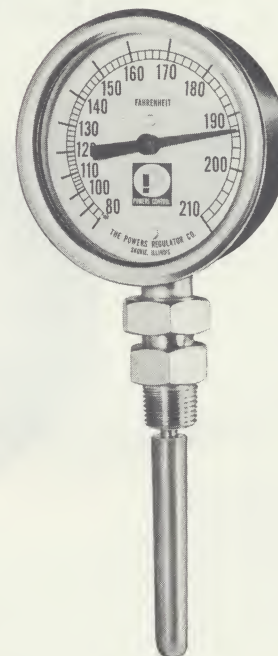
POWERS DIAL THERMOMETERS

bulletin TM 894-0

FEBRUARY, 1967

POWERS TM894 DIAL THERMOMETERS (FOR LIQUID EXPOSURE)

Powers TM 894 Dial Thermometers combine attractive design, easy-to-read dials, quick response and rugged construction to provide dependable service and long life. These thermometers are used in many temperature control applications where accurate temperature indication is required. Available in three rigid bulb styles and one remote bulb style with any of the dials shown below. With 1/2" NPT pressure tight bushing and union.

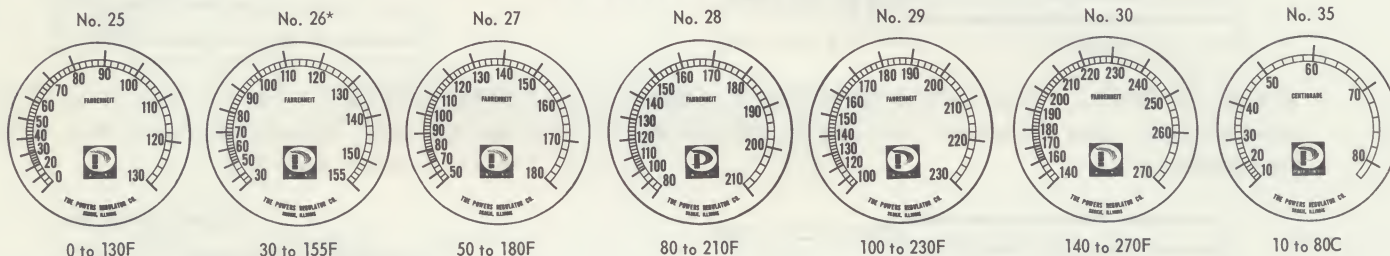


DIAL NO.	TEMPERATURE RANGE	BULB TYPE - PRODUCT NUMBER			
		HORIZONTAL	VERTICAL	45° ANGLE	REMOTE**
25	0 to 130F	894-2440	894-2280	894-2610	894-2060
26	30 to 155F	894-2290	894-2310	894-2300	894-2070
26*	30 to 155F	894-2340	894-2320	894-2360	894-2640
27	50 to 180F	894-2450	894-2480	894-2510	894-2080
28	80 to 210F	894-2350	894-2330	894-2520	894-2090
29	100 to 230F	894-2460	894-2490	894-2530	894-2100
30	140 to 270F	894-2470	894-2500	894-3300	894-2110
35	10 to 80C	—	894-2600	—	894-2710

*Three-color dial and chrome plated case

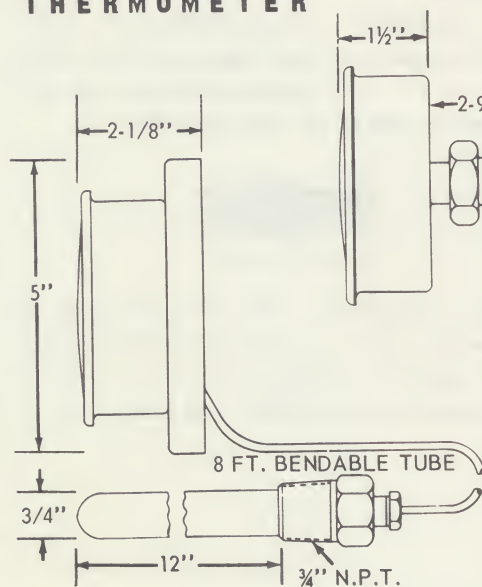
**With black steel flange for surface mounting and Style JD, 3/4" x 12" copper bulb and 8 ft. of copper capillary. Separable wells and other bulb styles and capillary lengths are available.

DIALS AVAILABLE



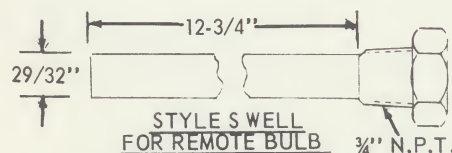
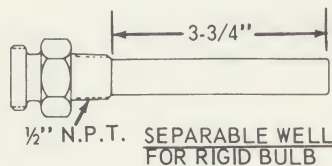
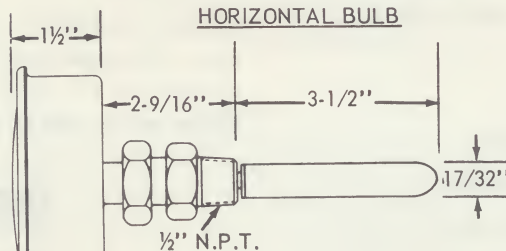
*Also available with 3-color dial and chrome plated case.

REMOTE BULB THERMOMETER

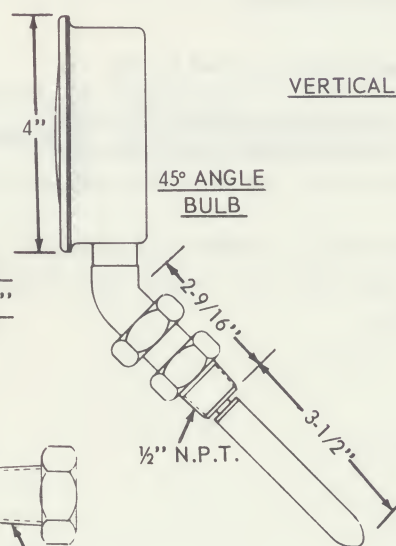


RIGID BULB THERMOMETERS - FOR LIQUID EXPOSURE

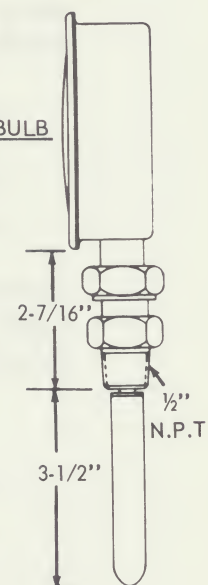
HORIZONTAL BULB



45° ANGLE BULB



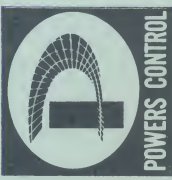
VERTICAL BULB



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